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# THE MEASUREMENT OF ACHIEVEMENT IN SHORTHAND

A dissertation submitted to the Board of University Studies of the Johns Hopkins University in conformity with the requirements for the degree of Doctor of Philosophy

1922

BY

ELMER RHODES HOKE

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## I. INTRODUCTION

During the last fifteen years there has been developing in university schools of education and in the practice of leading educators in the field, what might be spoken of as a movement for measurement in education. Teachers and schools have always felt the necessity for some sort of measure of the results of the educational process. In the past we have attempted to measure school efficiency by means of examinations and teachers' marks. In recent years there has been a growing tendency on the part of educators to give up reliance upon examinations and teachers' marks, and to depend instead upon the results secured by the use of certain tests and scales that have been scientifically constructed.

There are several types of evidence that teachers' marks have been inaccurate. Probably no one who has had several years or more of schooling will have any difficulty in calling to mind teachers who were known as "hard" or "easy" markers. We know full well that an examination paper in geometry marked 95 by one teacher, might be marked 65 by another. In fact, such a paper was, for the sake of the experiment, graded by 116 different teachers. One-third of them marked it at from 27 to 65, one-third between 65 and 75, while the remaining third of the teachers assigned to this paper marks ranging from 75 to 91. The extreme marks given to this paper were 27 and 91.

Again, in almost any high school it will be found that different teachers in the same department will give the same pupils totally different marks, one teacher giving many C's and D's with very few or no A's, while another teacher in the department will give all or nearly all A's, with very few C's or D's. In short, teachers' marks represent a subjective estimate of pupils' achievement. What is needed

is an objective measure of such achievement. In other words, a mark is desired which will reflect the quality of the object, that is, the examination paper or the pupil's performance. The teacher's mark is determined not only by this object, but also in a large measure by the subject—the personality of the teacher.

There are several reasons why teachers' marks are inaccurate. In the first place, the teacher either makes no attempt, or fails in the attempt, to estimate the relative value of the questions of an examination, but merely assigns a value of, say, 10 per cent to each of ten questions, or 4 per cent to each of twenty-five words in spelling. As a matter of fact, one question or one word may be ten times as difficult as another. Whenever experiments have been conducted in which teachers have attempted to judge the difficulty of examination questions, their judgment has been found to be very unreliable. The result is that the score of the pupil who solves the more difficult problems is not a fair statement of his ability or achievement as compared with the scores attained by other pupils on the easier problems. We have no unit of measurement in such a case. The ten points received by one pupil may mean something entirely different from the ten points earned by another pupil on a different exercise. It is as if different grocers had different scales, so that a pound of sugar from one store would contain three ounces, from another store five ounces, from another twelve, and from still another twenty.

Another objection to the teacher's mark is that the rate at which pupils work, or the time required, is not measured. Usually a very long period is given for an examination. The bright pupil will not be occupied during the entire time. His ability has not been measured. Results are therefore not comparable. The same score may represent totally different performances. In one case a score of fifty may mean five exercises correctly done in thirty minutes; in another case it may mean five exercises completed in two hours. Two pupils may get the same score, yet differ widely in ability.

Moreover, the traditional examination and its mark do not afford the teacher any means of interpreting the mark. The teacher has no standard or normal performance with which to compare the achievement of the pupil. No teacher of shorthand has hitherto been able to state as a fact: "My class averages so many per cent above (or below) classes in other schools throughout the country, in ability to read shorthand notes." We have had no suitable standards with which to compare our results. It *is* now possible for an elementary school teacher to say of a boy in her class: "He is just so many per cent above the average boy of his age in the United States in his ability in spelling." The same may be done for handwriting, arithmetic, and other school subjects for which standard tests or scales have been constructed.

It is the purpose of this investigation to construct tests for Gregg Shorthand which will be free from the objections to the traditional type of examination, and at the same time accomplish other desirable results which will be discussed hereafter. The advent of similar tests and scales in other subjects has given an impulse to experimentation in education. This has resulted in better teaching. Whenever an adequate test is developed for any school subject, the teaching of that subject is inevitably improved. It is true that after the test has revealed its facts, the teaching problem is still to be solved and the work of teaching still to be done. But without the facts which the standard test reveals, a very important incentive, and in some cases important suggestions, for better teaching methods are lacking. The standardized test is therefore an instrument which shorthand education can no longer afford to neglect. Experimentation in methods of teaching must await measures of the results of teaching.

The necessity of constructing standard tests for the various school subjects, including shorthand, is stated by Thorndike as follows: "What makes quantitative work in education hard is that it deals with facts of human nature and behavior.

Complexity, variability, and the absence of proper units and scales of measure are the three great difficulties. . . . The complexity must be endured, the variability can be overcome by modern statistical technique, and the lack of units and scales is to be remedied by special investigations."*

We could have no sciences such as physics, chemistry, astronomy or geography if we did not have such measures as those of weight, length, area, volume, and temperature. Just so we can never have a science of education unless we can measure educational facts. Without measures education is a happy-go-lucky, hit-or-miss process. It may accomplish much *good* work, but it can never accomplish the *best* possible work until we can say in education, "I know," not, "I think." We have measures which make it possible for us to *know* how much heavier or taller one boy is than another, even though one be in San Francisco and the other in New York. It is important to be able to know also how much *faster* or *better* the one writes shorthand than the other. For science and progress always wait upon measurement.

Still other values of standard tests should be mentioned. Diagnostic tests will serve to point out specific deficiencies or educational ailments, for which it becomes the duty of the teacher to prescribe and administer a remedy. Indeed, the giving of the test will ofttimes suggest the remedy to apply. Two forms of a test may be used, before and after a given period of experimentation with different methods of teaching, in order to ascertain which of the methods has produced the better results. Again, the standard test often helps to motivate work and secure interest. Pupils will accept the scores they make as just and fair. They will set to work to surpass their own past records. Many pupils do not take teachers' marks seriously, knowing full well that a mark may reflect the teacher's dyspeptic condition or excessively lenient good-nature. The standard test score,

* "Quantitative Investigations in Education." Sch. Rev. Monograph. No. 1. Pp. 35 and 36.

however, is not only recognized as just and fair, but has the added interest that comes from knowing what pupils in other schools are doing. Furthermore, the standard test, such as the scale for quality of shorthand penmanship, makes it possible for the pupil to measure his own achievement and progress. Knowledge of success makes for success. The teacher has a similar satisfaction and incentive in judging her work by comparing her class medians with standard scores. In these and other ways standard tests should make for the improvement of the teaching of shorthand.

In entering upon this investigation it was recognized at the outset that the use of shorthand is a complex process, involving mental and motor aspects—knowledges and skills. An attempt was made to analyze shorthand into its important components and to plan for the measurement of these isolated functions. It seemed that shorthand is made up of a number of processes, indicated by the questions that one would wish to ask with regard to a pupil whose ability in shorthand one desired to know. These questions appear to be four in number: 1. Can he read his notes? 2. How rapidly can he write? 3. How well does he write, or what is the quality of his notes? 4. Does he know the system—*how* to write the outlines? In other words, the important factors which one would wish to measure are 1. reading ability, 2. quality of writing, 3. speed of writing, and 4. knowledge of the system as presented in the text-book. This analysis has determined the plan of the investigation. A reference to the table of contents will show that the sections of this study are attempts to provide measures which will enable one to answer these questions.

It is realized that to undertake to construct such a variety of tests and scales as seems to be required is to attempt a rather ambitious program. It is hoped that some part, at least, of the work shall attain to success, and that from the whole undertaking, some good may flow.

Not much attention will be given in this study to the

methods of administering tests, or to statistical and graphical methods. Those who may wish to use the tests are referred to standard handbooks mentioned in the bibliography for answers to general questions of this sort.

Nor will this investigation touch the question of prognostic tests for shorthand. It appears to the writer to be probable that certain standard tests now in existence will, in combination, serve that purpose well. A pupil who writes a good "hand" will probably write legible notes. A handwriting scale may be used. A pupil who spells well will probably be able to spell well in a somewhat different system (phonetically), and will therefore succeed well so far as knowledge of the system is concerned. A spelling test may be used. Other factors involved, and for which tests are available, are ability to read rapidly, to remember and to associate symbols and make these associations automatic. The shorthand writer must be able to *read* notes, *associate* the shorthand symbols with the letters of the alphabet, and *remember* the word-signs and forms for words. The writer would predict success in shorthand for one who makes good scores on these five tests: handwriting, spelling, reading, association and memory.*

*The writer has recently published a Prognostic Test for Stenographic Ability. This test includes seven elements as follows: motor reaction, speed of writing, quality of writing, speed of reading, memory, spelling, and symbols.
See also: Bills, M. A., Methods for the Selection of Comptometer Operators and Stenographers. J. of A. Psych. Sept., 1921, pp. 275-286. Also: A Test for Use in the Selection of Stenographers. J. of A. Psych. Dec., 1921, pp. 373-377.

## II. THE CONSTRUCTION OF A SCALE FOR THE MEASUREMENT OF ABILITY TO READ SHORTHAND

When entering upon the problem of constructing some sort of test for the measurement of the student's ability to read correct shorthand notes, the first impulse was to use some of the standardized silent reading tests, simply having them printed in shorthand instead of ordinary type. Further consideration, however, led to the abandonment of this plan, for the reason that it was felt that such a test would measure a confusion of two things, rather than merely reading ability. For the most part such tests require some response from the pupil, and these responses are of some unknown degree of difficulty. One could never be sure how much of the difficulty experienced by certain pupils with such a test would be due to the difficulty of the response called for, and how much to the difficulty in reading the shorthand notes. Some of the reading tests attempt to measure comprehension, usually by asking rather puzzling questions about what has been read. These would be, of all tests, the most unsuitable for the measurement of ability to read shorthand notes.

In order to eliminate this element of difficulty in making the required response, the next suggestion was to use a "simple directions" test, printing the directions in shorthand instead of ordinary type, and accepting the correct response as an evidence of the successful reading of the shorthand. But here again investigation showed that such tests were made up of directions which were *not* "simple," that is, the responses called for were such as involved some degree of difficulty. Again one could not be sure just what part of a given pupil's failure might be due to the difficulty he experienced in understanding the directions and the response

required. The pupil might read the shorthand correctly and yet fail to make the response required by the test.

The ordinary way by which teachers gauge roughly the ability of pupils to read their notes is to have them attempt to transcribe them on the typewriter, or to call upon them to read in class. Sometimes also shorthand readers are used. These methods are all good as classroom exercises but are not very readily capable of greater refinement or of standardization for use as group tests. It is always possible, of course, to standardize, more or less, the procedure involved in testing *individuals* as to their ability to read perfect shorthand notes. But teachers do not have time to go into individual testing very extensively. *Group* tests of reading ability are needed.

The reading of the student's own notes in class is perhaps a good classroom exercise, but can hardly be standardized as a test of reading ability. The transcribing of his notes upon a typewriter is open to a number of objections. The notes themselves are not standardized. Usually they are of different matter, and always vary in their quality as shorthand notes. It is furthermore impossible to say just what part of the total time consumed in the transcription was spent in reading and what part in typing. The good typist might very easily make a better score than the poor typist, even though the latter excelled in his ability to read shorthand. Finally, pupils very often resort to various "cribbing" devices to piece out what they cannot get from their notes.

From all of the foregoing considerations it became evident that an attempt should be made to devise a test in such a way that the particular thing in question, reading ability, would be isolated and measured, in a standardized group test, in which comprehension or the difficulty of making the required responses should play no part. Accordingly an attempt was made to devise a test comprised of "simple directions" which would be really *simple,* that is, directions which involved *zero difficulty.*

To this end teachers, graduate students and friends were asked to contribute questions, exercises or directions, the answer or response to which would involve no difficulty, that is, would be given correctly by as nearly as possible one hundred per cent of all who attempted them. After some efforts along this line the attempt was given up. It seemed that the exercises either involved *some* difficulty or were ridiculous. It might, notwithstanding, be possible to devise a shorthand reading test in this way, but the suggestion came that it would be in many respects more satisfactory to try the completion test method. It was along this line that the test A-1 was actually worked out by a procedure which we shall now describe.

Two actual business letters were selected, having a total length of exactly five hundred words. In these letters every tenth word was underscored to indicate that an alternate word was to be supplied with it, from which the person tested should choose the correct one. The problem arose as to whether the correct word should always be written above the incorrect one. This would evidently be unsatisfactory. The student would soon discover the order. It would be likewise unsatisfactory for the same reason to alternate, having now the correct, now the incorrect word written above. A purely chance order was required. Accordingly a penny was tossed fifty times and the "heads" recorded as meaning that the correct word should be placed above, while the "tails" meant the reverse order.

When it was attempted to select the alternate words it was discovered that, due to the workings of association paths in the mind, the words that suggested themselves were such as had some more or less logical connection with the sentence. This was just what was *not* wanted, for it would mean that the choices would be "fine" ones, requiring a good deal of power of discrimination, or in other words, choices of a considerable degree of difficulty. In order, therefore, to secure such words as would make the choices of practically no difficulty, the Ayres Spelling Scale was resorted to, and

the words taken from one of its columns. When each underscored word was supplied with its alternate it became apparent that in several instances the word chanced to be one which would make fairly good "sense," thereby making the choice of the right word very difficult. Such words were discarded and still others taken, further down the column of the Spelling Scale, until the choices all appeared to be satisfactory.

In order to ascertain whether these word choices were really of approximately zero difficulty, the two letters were mimeographed, together with directions, as follows:

Read the following business letters and draw a line through the incorrect word in each place where a choice of words is called for. Accuracy is more important than speed, so don't do the work faster than you can do it correctly.

DEAR MR. JONES:

We beg to acknowledge receipt of month / note for first annual premium on policy No. 28148 thus putting / extra your policy in full force and effect at once. Dress / In event of your death during this year the policy will / beside be paid in full face value, less this note. Teach / If you should desire to pay this note at any happen / time before its maturity, the same will be discounted at the / begun rate of 4% per annum for balance of year.

Build / You will find enclosed our "Daily Cost of Insurance" setting file / forth the easiest way of meeting such obligations. In order to / provide encourage its method, we will allow 6% discount for all / understand remittances sent us during the year on account of stood / your note, thus distributing its burden and relieving its strain.

Fix / As one of our policy-holders you are a member of / born the Corporation and thus interested with its management in goes / building up its membership. In 1915 our business was considerably in / hold advance of the year 1914, and we are anxious to / drill make the current year a still better one. This army / will no doubt be done, but it will be much follow / easier for us to do it if all our policy stole / holders will contribute their share in the way of interesting income / their friends and in the way of securing their applications.

Paid / May we not have you with us in this good work / enter ? Every new policy-holder will contribute to the greater vitality / railroad of the Fund, and therefore to its surplus accumulations. case / and thus to larger dividends. This incentive for your sympathetic ticket / and active co-operation is therefore worthy of your consideration.

Wishing you account all success in every effort to advance the welfare of while the Fund, we are

Very sincerely yours,

Washington Mutual Real Fund.

Dear Sir:

We are in receipt of your letter of recover recent date in which you ask us to send mountain booklet and terms on the Smithton Typewriter. Following are our terms steamer to district agents whom we expect will appoint sub-agents as speak well as sell direct:

The Smithton Typewriter is retailing those at $75. Our price to agents is $50 Smithton. If might cash accompanies the order a discount of 2% will be allowed. begin We guarantee our machine for a period of one great year against imperfect parts or mechanical construction and will stand deal back of all sales you make.

We are inclosing an illustrated almost folder of instructions to users of our machine and brought under separate cover mailing one of our dealers instruction booklets. If Less you wish to become our representative in your district event we will ask you to outline by counties the territory you off wish to cover.

With your first order we will furnish true some illustrated folders and also some advertising cuts if you took intend to do local newspaper advertising. We will do miss everything possible to help you get business. We are in inform position to fill orders on twenty-four hours' notice and will both give a preference to our American agents. Hoping to hear from heart you further if interested, we beg to remain,

Respectfully yours. who

In this form the test was given to forty-four boys in the commercial department of the Frederick, Maryland, Boys' High School, and to forty-six girls in the Junior class of Hood College. The papers were subsequently scored. It was found that the girls made the wrong choice in six-tenths of one per cent of the cases, while the boys made the wrong choice in three and one-fourth per cent of the cases. Of 71 errors made by the boys, 36 were on three on the choices: "to-provide," "real-fund" and "file-forth." Of 15 errors made by the girls, 11 were on these same three choices. It appears that in all three cases the words form a "phrase," which fact made the choice confusing. The three difficult choices were therefore changed by supplying other alternate words, such as would avoid this confusion. With this change it appears that the test, as printed in ordinary type, would involve certainly less than two per cent of difficulty, and in the case of the girls, less than one-half of one per cent of difficulty. This seemed to be a satisfactorily close approach to zero difficulty, and accordingly the test was now printed in shorthand, with only the word choices in ordinary type. This test is known as "Test A-1, Reading Ability."

By the opening of the school year of 1921-22 the author was able to report tentative standard scores on this test, based on 233 cases in 16 different classes in 12 different states, as follows:

For those who had one year of instruction in shorthand, a median score of..... 67.
For those who had two years of instruction in shorthand, a median score of..... 80.

Two other business letters, from the same firms, dictated by the same men, and therefore probably of approximately the same style and difficulty, are at hand, for the construction of a second form of the A test. But the publishing and standardizing of a second form has been postponed until further use of the first form shall have fully justified its validity for its purpose.

It should be noted in passing that the directions given with the preliminary testing: "Draw a line through the

incorrect word" were changed on the A-1 test to: "underscore the correct word." One person who tried the preliminary test reported that the required turning of the attention to the *incorrect* word led to some confusion, and that it would be easier to check the *correct* word. The objection seemed well-grounded and the change was made.

Further use of this test with a larger number of pupils, 492 in all, distributed in 33 classes in 17 states, shows somewhat lower standard scores, which appear in the following table:

TABLE I

DISTRIBUTION OF SCORES, AND STANDARD MEDIANS OF A-1 TEST

| Class Intervals | 1 yr. Class | 1½ yr. Class | 2 yr. Class | All Classes |
|---|---|---|---|---|
| 161-170 | 0 | 0 | 0 | 0 |
| 151-160 | 2 | 0 | 3 | 5 |
| 141-150 | 4 | 0 | 1 | 5 |
| 131-140 | 1 | 1 | 1 | 3 |
| 121-130 | 2 | 1 | 1 | 4 |
| 111-120 | 1 | 1 | 4 | 6 |
| 101-110 | 3 | 7 | 10 | 20 |
| 91-100 | 11 | 10 | 15 | 36 |
| 81- 90 | 14 | 12 | 18 | 44 |
| 71- 80 | 42 | 18 | 21 | 81 |
| 61- 70 | 38 | 30 | 25 | 93 |
| 51- 60 | 29 | 16 | 16 | 61 |
| 41- 50 | 39 | 23 | 6 | 68 |
| 31- 40 | 25 | 18 | 6 | 49 |
| 21- 30 | 4 | 1 | 0 | 5 |
| 11- 20 | 3 | 0 | 0 | 3 |
| 0- 10 | 0 | 1 | 1 | 2 |
| No. of cases | 218 | 146 | 128 | 492 |
| Medians | 63.5 | 65.7 | 76. | |

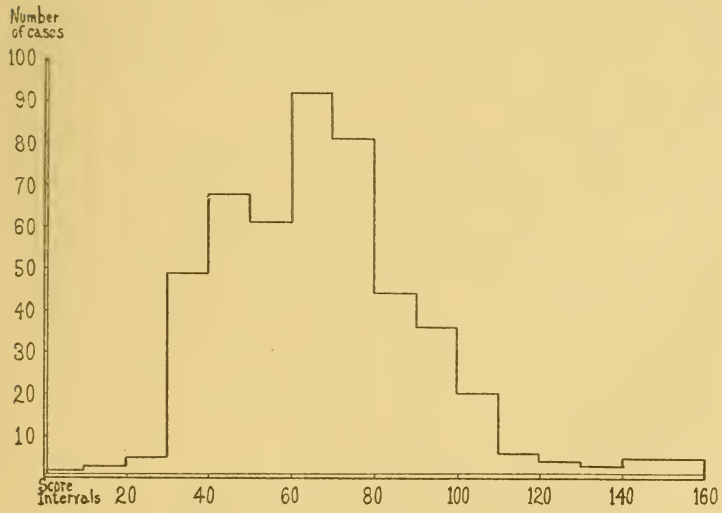


Fig. 1. Distribution of 492 Scores on Test A-1

## III. THE CONSTRUCTION OF A SCALE FOR SPEED OF WRITING IN SHORTHAND

The usual way in which teachers of shorthand attempt to measure the speed of writing of their pupils is by dictating certain material to the class, gradually increasing the rate of reading until they can barely succeed in "taking" it. This method is open to several objections. In the first place, it presupposes a "class," whereas in reality there is no such thing as a class. No two in the class can write at exactly the same rate of speed, except by a very remote chance, and yet this test presupposes that a group will be able to take the dictation at a given rate. The method would be more valid if applied to an individual, and even then the teacher should be in a position to see the pupil's notes, so as to know whether the pupil was "keeping after." Otherwise, if the dictation were too rapid, the pupil would be embarrassed and confused by the necessity of remembering the part dictated but not yet written, and the tendency would be cumulative in the direction of a decrease of efficiency, even below the real ability of the pupil.

The method is further open to the objection that the material dictated is not standardized. Its difficulty is not known. The writer has seen classes struggling and growing discouraged, (a condition which is opposed to improvement) when they came upon a difficult section of their dictation book, made up of materials in "heavy" language, perhaps more or less technical. Being accustomed to write 100 words per minute, they now failed to maintain this speed, and were perhaps chided by the teacher for their failure to do what they should never have been expected to do. It would be well if even the dictation practice *exercises* were standardized, so that in all cases pupils and teachers might know what might reasonably be expected of them at their stage of advancement. But certainly *tests* should be on standardized materials.

In an effort to meet the first objection, teachers have sometimes given the class a passage in longhand, and asked them to transcribe it into shorthand. This may be a legitimate classroom procedure, but as a test it is in turn open to some objections. What does it test? Evidently reading ability and knowledge of the shorthand system as well as speed of writing. This ability and this knowledge are important, and well worthy of being tested or measured. But there is a time and place for everything. Certainly a good test will not attempt to measure a number of different things at the same time.

The problem then is: how may a test be constructed to measure the pupil's ability to write shorthand rapidly, such that it will allow each pupil to work at his own rate of speed (he should not be confused by being compelled to write faster than he is able, nor should he find time hanging heavy upon his hands because the dictation is too slow to call forth the best speed that is in him), will employ standard materials of known difficulty, and will afford standard scores for comparison?

To supply a standardized passage in ordinary type with directions that it be copied in shorthand is open to the objection that so much depends upon the pupil's knowledge of the system. Furthermore, much time would be consumed in looking back and forth, from the copy to the line of writing. One who knew the system well and could look back and forth readily without losing his place might win the highest score in such a test, even though he actually *drew* his outlines very slowly instead of really writing them. If the standardized passage were supplied in shorthand, with directions merely to copy it, the objections would be that the pupil must still look back and forth, hunting his place, and that furthermore much time may be lost in the attempt to read the shorthand, for one can not write shorthand readily unless one knows the words and the letters he is writing.

It seemed, therefore, that the pupil should be supplied with the longhand of the passage to prevent his losing time in

reading; that he should be supplied with the shorthand of the passage to prevent his gaining or losing anything in his "speed of writing" score by virtue of his superior or inferior knowledge of the system; and that both the longhand and the shorthand should be given him as he goes, at the rate of speed which just suits him, in such a way that he would not be compelled to look back and forth, hunting his place in the copy. These considerations suggested, what has been called, "the tri-interlinear device" of the tests B-1 and B-2, for speed of writing. It will be noticed that these tests provide three lines, one for the longhand, one for the shorthand, and a line of writing for the pupil's own notes. It is believed that these tests will more nearly isolate the function it is here desired to measure, speed of writing shorthand notes, than will any other sort of test that has been devised. One's eyesight is less taxed, not being required to find the place in the copy. Nothing depends upon one's hearing, as in the case of matter dictated. One's score is not much affected by one's knowledge of the system, for the proper shorthand outlines are indeed "at his pencil's end," supplied in the test. Nothing depends upon memory, as in the case of a test dictated to a group. The writer has known cases where the inferior pupil came out ahead in such tests, simply because when the dictation came too fast they had the ability to store up much of it in memory, to write it later when the dictation was slower or had ceased. This, of course, is a very valuable ability for the practical stenographer, and should be cultivated if possible. But it should not be allowed to intrude when the purpose is to measure speed of writing, isolated from everything else, or as nearly isolated as may be possible.

Copies of the tests, keys, and class record sheets are given in the appendix. They include the necessary directions for giving and scoring the tests. It will be noted that by means of the key supplied to teachers, the tests may be scored in a very small fraction of a minute. In fact, the teacher might score the papers for a large class in less than five minutes.

This is one great advantage of these tests. The resulting "pupil's score" is a score in words written per minute.

It has been reported to the writer that the fastest living writer of Gregg Shorthand tried these tests and found that he could not complete their four hundred words, or more, in the allotted time, two minutes, even though he could ordinarily "take" the same amount of material in dictation in less than two minutes. The obvious reply is that we are not claiming for these tests that they will give the *same* score that some other form of test will yield. The scores in dictation tests will probably be higher. All that need be claimed to establish the validity of these tests is that the *relative* scores of two or more persons who take the tests give a true idea of their relative ability so far as speed of writing is concerned. If they do this as well as other sorts of tests do, and *in addition* supply standard scores, they have at least that advantage to their credit. That no one can complete the tests in the time allowed is not at all disconcerting, but rather most gratifying. It was the purpose to provide more material than any one could finish. Otherwise those who finished before "time" was called would not have been tested.

Tentative standard scores were published in September, 1921, for the B-1 and B-2 tests as follows:

| | B-1 | B-2 |
|---|---|---|
| Number of cases | 281 | 265 |
| Number of classes tested | 17 | 15 |
| Number of states represented | 11 | 11 |
| Median for those who had shorthand 1 yr. | 55.9 | 69.1 |
| For those who had shorthand 2 years | 73 | 80.5 |

Further use of these tests with a larger number of cases, 984 in all, distributed through 32 classes in 15 states for B-1 and 29 classes in 16 states for B-2, yielded the median or standard scores shown in the following table:

## TABLE II

DISTRIBUTION OF SCORES, AND MEDIANS OF TESTS B-1 AND B-2

| Class Intervals | Test B-1 | | | Test B-2 | | | Both Tests |
|---|---|---|---|---|---|---|---|
| | 1 year Group | 1½ yr. Group | 2 year Group | 1 year Group | 1½ yr. Group | 2 year Group | All Groups |
| 131-140 ... | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 121-130 ... | 2 | 0 | 0 | 0 | 1 | 3 | 6 |
| 111-120 ... | 2 | 1 | 0 | 1 | 6 | 2 | 12 |
| 101-110 ... | 2 | 6 | 4 | 6 | 5 | 9 | 32 |
| 91-100 ... | 1 | 13 | 10 | 9 | 12 | 16 | 61 |
| 81- 90 ... | 7 | 15 | 28 | 32 | 32 | 24 | 138 |
| 71- 80 ... | 17 | 32 | 19 | 50 | 14 | 27 | 159 |
| 61- 70 ... | 50 | 24 | 20 | 62 | 17 | 15 | 188 |
| 51- 60 ... | 75 | 24 | 27 | 58 | 12 | 12 | 208 |
| 41- 50 ... | 58 | 17 | 11 | 28 | 6 | 4 | 124 |
| 31- 40 ... | 25 | 9 | 7 | 4 | 1 | 1 | 47 |
| 21- 30 ... | 6 | 1 | 1 | 0 | 0 | 0 | 0 |
| 11- 20 ... | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| No. cases.. | 246 | 142 | 127 | 250 | 106 | 113 | 984 |
| | 515 cases on B-1 | | | 469 cases on B-2 | | | |
| Medians .. | 55.6 | 69.5 | 70. | 66.6 | 82.1 | 79.3 | |

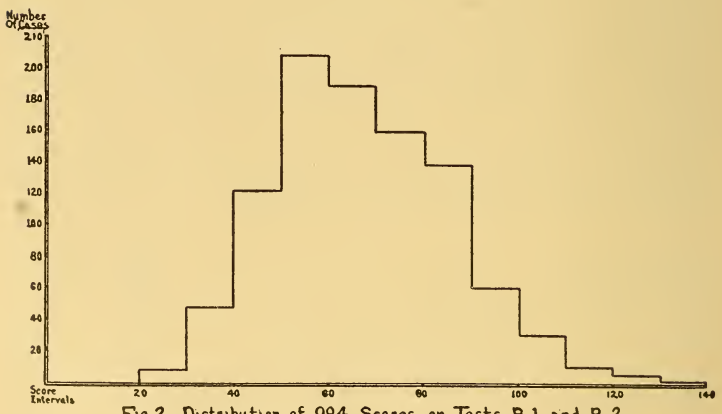


Fig. 2. Distribution of 984 Scores on Tests B-1 and B-2.

Tentative standard scores for the two forms of the B tests seem, at first sight, to indicate that B-2 is less difficult than B-1, inasmuch as the norms set for the two forms are approximately ten points higher for B-2 than for B-1. It would, of course, be very unfortunate if two forms of any test differed so widely in difficulty. The two selections were made with a view to having them of approximately equal difficulty. They were taken from the same writing, and appear to be similar in style.

Fortunately, there was evidence to show that in all the cases upon which these tentative norms were based, B-1 was given first, and B-2 second. There was a possibility, therefore, that the difference of ten points might be due to the effect of practice, especially in view of the fact that the test is quite different in its nature from anything the students were likely to have done before. Accordingly when the two forms of the B test were given to the ninety-six cases, as described elsewhere, they were given in the reverse order: B-2 before B-1. The result was that the median score for B-1 was found to be, not lower, but actually six points higher than the B-2 median. The practice-effect may have been more or less in this case than in other places. Taking these results as typical, however, they would indicate a difference in difficulty of only two points—an almost negligible difference. It is recommended that those using the tests should read the norms given for B-1 as the standards for the first use of a B test, and similarly for the norms given for B-2.

## IV. THE VALIDITY AND RELIABILITY OF THE A AND B TESTS

Two questions which should be asked with regard to every test are: 1. Is it valid? 2. Is it reliable? In other words, the first question is whether the test measures the function it pretends to measure; the second question asks whether the test or the different forms of the test measure that function consistently. A test may be very interesting and very cleverly arranged, yet really useless if it does not measure the function it is intended to measure. Again, a test is comparatively worthless if it gives widely differing results on two or more successive applications. In that case we say it is not trustworthy, or not reliable. It is incumbent upon anyone who offers tests to teachers for their use to inform them as to the extent to which the tests may be trusted to do the thing they are said to do, and to do it consistently. To answer these questions a number of investigations have been made.

### The Validity of Test A-1

In searching about for an absolute measure of reading ability, with which the results of the A test might be compared, so as to show its measure of validity, the author decided upon the plan of giving individual, timed tests in reading. An arrangement was made with the Boys' High School, Frederick, Md., whereby the boys of the Commercial Department were permitted to come to the office, one at a time. The writer met each boy, explained to him the purpose of the work, and the fact that the results would not affect him in any way, thus trying to get the best possible *rapport*. The boy was then requested to begin reading aloud from a page of printed shorthand notes (Gregg Speed Studies, page 156, "Productive Employment"). Each reading was carefully timed with a stop-watch for three minutes, and the number of the last word read was recorded. This number was regarded as a gross result, from which the number of

words "prompted" was subtracted to get the net number of words read. In prompting, the experimenter allowed exactly five seconds, in every case, before giving the help. The net number of words read was divided by the number of minutes (three) to get the net number of words read per minute. These scores were considered sufficiently reliable measures of the pupils' reading ability to justify their being adopted as a criterion.

Test A-1 was then used with this same group of boys, and after an interval of a week, used a second time. These two sets of scores were averaged and the average scores correlated with the individual-timed reading scores. The resulting coefficient of correlation, using the Pearson formula, was .55, P. E. .08. The correlation with the first use of A-1 yields a somewhat lower coefficient, while with the second use of A-1 the coefficient of correlation is somewhat higher than that given. Furthermore, two or three of the brighter boys tried to "beat" the test the second time they took it, by guessing at the word-choices, thus trying to accomplish a greater part of the work than they could otherwise do. Their guesses proved rather unfortunate. Inasmuch as the method of scoring the test calls for subtracting the number wrong from the number right, these boys received very low scores—much lower than on the first trial of the test, when they followed directions honestly. If these scores were left out of account, the coefficients of correlation would be nearly ten points higher, that is, approximately .65 with a correspondingly lower P. E. However, even the obtained coefficient, .55, is regarded as satisfactory evidence of the validity of the test. This statement needs to be qualified, however, by a recognition of the fact that the number of cases was perhaps too small (forty-one cases) to be conclusive.

### The Reliability of the A Tests

As mentioned above, test A-1 was used twice with the group of forty-one boys, with approximately one week intervening between the two uses of the test. These two

sets of scores were correlated to show the extent to which the test is reliable, or consistent, in yielding the same sort of results on successive trials. The self-correlation of test A-1 was found to be that expressed by the Pearson coefficient .80, P. E. .04. This coefficient seems quite satisfactory, though here again it needs to be remembered that the number of cases was rather small.

The author's experience in the use and the scoring of the A-1 test indicates that while the results secured from the first use of the test are good, the second use of the same test yields somewhat better and more reliable scores. This appears to be due to the fact that the nature of test is "strange" to the pupils. On the second trial they get the "swing" of it and do themselves justice. The same remarks apply with equal force to the B tests. Experience with the results in those cases where pupils, knowing the author personally, tried to "beat" his test by guessing at the word-choices, justifies those who use the test in warning the class that the test and its scoring are such that "the cards are stacked" *against* those who guess. The chances are that they will make better scores by honest work than by guessing. Teachers can very readily tell when guessing has been resorted to. Given the context, the word-choices are of approximately zero difficulty. Honest papers usually show no mistaken choices, so far as they go. Or at most, they may show one or two mistaken choices. When pupils guess they will have a much larger and very noticeable number of mistakes.

### The Validity of the B Tests

Miss Brewington of the University of Chicago gave a group of thirty-four pupils two forms of the B test. To the same group was assigned the task of copying familiar printed shorthand from a page of a text-book for three minutes. All scores were reduced to a words-per-minute basis. The B-1 and B-2 scores were averaged, and the average scores correlated with the scores derived from the timed readings from good, printed shorthand notes. The

Pearson coefficient of correlation was found to be .51 with a P. E. of .09. The correlations with either of the B tests alone were approximately the same. This coefficient is worthy of some consideration as showing the validity of the tests, though the number of cases must be admitted to be too small.

A similar experiment was made in the High Schools of Frederick, Md. Ninety-six pupils were given the two forms of the B test. They were also given an original test, which may be described as follows: A selection of fifty words from "Rip Van Winkle" was written on the blackboard in good shorthand notes.

> "He was observed at first to vary on some points every time he told it, which was doubtless owing to his having so recently awaked. It at last settled down precisely to the tale I have related; and not a man, woman, or child in the neighborhood but knew it."

The teachers then read the shorthand to the class and had them copy it three times for practice and to familiarize them with the text and the outline. Practice papers were then laid aside and the pupils were told to write the matter as often and as rapidly as they could, for three minutes. The teachers gave the signals "start" and "stop" and kept the time carefully. Papers were then collected and scored, in words per minute.

The correlation of the scores on this original test with the average scores made on the two forms of the B test yields the coefficient .73 P. E. .03. This coefficient is regarded as quite satisfactory and the number of cases as fairly large. These results tend to show the validity of the B tests. Taken together with the results secured by Miss Brewington, they show that the B tests will give, in a few minutes, scores very similar to those derived from other, unstandardized tests devised with a view to measuring the same function, speed of writing. The B tests have the advantage of being more convenient, requiring less time to administer and score, and affording standard scores for comparative purposes.

## The Reliability of the B Tests

Scores received from Miss Brewington on the two forms of the B test for fifty-seven individuals, show a self-correlation expressed by the Pearson coefficient .83 with a P. E. of .03.

Self-correlation of the ninety-six scores on the two forms of the B test administered in the Frederick High Schools is found to be .87, P. E. .02.

Here we have a fairly large number of cases (one hundred and fifty-three in all) and a close agreement between the two coefficients, tending to show that the true degree of self-correlation will probably be found to be between .80 and .90, or at any rate, high enough to justify the B tests from the standpoint of their reliability.

TABLE III

Coefficients of Correlation Showing Validity and Reliability of the A and B Tests

| Scores Correlated | No. cases | r | P. E. |
|---|---|---|---|
| Average of two scores on A-1 with stop-watch-timed individual test | 41 | .55 | .08 |
| Self-correlation of A-1 | 41 | .80 | .04 |
| Average of B-1 and B-2 with copying from text-book 3 min. (Chicago) | 34 | .51 | .09 |
| Average of B-1 and B-2 with writing familiar text 3 min. (Frederick) | 96 | .73 | .03 |
| B-1 with B-2 (Chicago) | 57 | .83 | .03 |
| B-1 with B-2 (Frederick) | 96 | .87 | .02 |

## V. THE CONSTRUCTION OF A SCALE FOR SHORTHAND PENMANSHIP

For the purpose of constructing a scale for the measurement of the quality of Gregg Shorthand penmanship, a collection of specimens of shorthand was made in a uniform way. From "The Legend of Sleepy Hollow" and "Rip Van Winkle," both from Irving's "Sketch Book," two hundred and fifty-four selections were made, of exactly fifty words each. These selections were cut from the books and glued upon cards three by six inches in size, both in the shorthand and in the longhand. These cards were distributed to pupils in various schools, together with a sheet five and one-half by eight and one-half inches, upon which were printed the outlines of two squares, three by three and one-half inches each, together with the directions:

> "Number..... (Write here the number given on the card.) Copy the shorthand given on the card in the upper space first, then again in the second space."

The purpose was to regard the first writing as practice, and to *use* the second in the actual construction of the scale. Most of the cards were copied by four different individuals. By means of the number at the top of the page each specimen can be identified, and by turning to the card with the corresponding number, the key to the shorthand may be found.

Teachers were instructed to allow pupils to use either pen or pencil and to allow them sufficient time so that all might finish. They were also instructed to secure specimens from all pupils, regardless of the degree of proficiency or advancement in shorthand.

In this way eleven hundred and fifty-five specimens were secured. The names of the schools and the number of specimens secured from each are as follows:

Western High School, Baltimore, 615; High School of Commerce, New York, 165; Schenley High School, Pittsburgh, 96; The Baltimore Business College, 79; Baltimore City College, 25; Girls' High School, Frederick, Md., 50; Boys' High School, Frederick, Md., 42;

The Harrisburg (Pa.) Shorthand School, 28; The Lancaster (Pa.) Business College, 26; individuals, 3; The Gregg Publishing Company, 6; Johns Hopkins University, Summer Session, 20.

The six specimens secured from the Gregg office were written by experts. The twenty specimens secured in the University Summer Session were written by persons, none of whom had ever had any instruction in shorthand whatsoever. These twenty-six specimens were secured in this way after it had been found that the more than eleven hundred specimens contained few if any that were good enough for the upper end of the scale, or poor enough for the lower end.

The entire eleven hundred and fifty-five specimens were graded by five judges. The judges were told to sort the

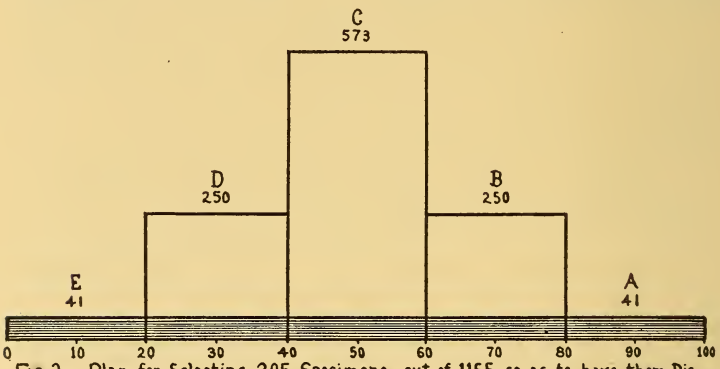


Fig. 3. Plan for Selecting 205 Specimens out of 1155 so as to have them Distributed at Approximately Equal Intervals over the scale. The Shaded Area Represents the 205 Specimens Retained. The White Area Represents the 950 Specimens Discarded.

specimens into five piles, very good, good, medium, poor, and very poor, in such a way that approximately one-half of the entire number would be in the middle or medium group, about forty specimens each in the very good and very poor groups, with the rest about equally divided between the good and the poor. In other words, a normal distribution was assumed, with the percentages for the five groups approximately three, twenty-two, fifty, twenty-two and three. It was felt that this would assist the judges in giving a better rating than would probably be the case without such guidance.

The five judgments on each specimen were then averaged and on this basis a selection was made of approximately forty-one specimens of each grade, very good, good, medium, poor and very poor. This meant that in all only two hundred and five specimens were retained for further grading, while the great bulk, nine hundred and fifty specimens, representing a surplus of material at about the middle part of the scale, could be at once discarded. It was believed that the two hundred and five specimens, so selected, would include an adequate number for each step of the scale. (See figure 3.)

Twelve additional judgments were then secured for the two hundred and five specimens, in accordance with the following directions:

DIRECTIONS FOR GRADING 205 SPECIMENS OF SHORTHAND

*Preliminary*—Shuffle thoroughly like cards.

I

Sort the 205 specimens into five piles (A, B, C, D, E, or Very Good, Good, Medium, Poor, Very Poor) so that there are not less than 34 nor more than 44 in any one pile. If there are more or less than these numbers in any pile, re-sort the larger piles at least in part.

II

Re-sort each of the five piles into two, so that you get the better and the worse halves, with not over 25 or under 15 in each half. This step will give you ten piles, from the worst, which we will arbitrarily call 1, to the best which we will call 10.

III

Turn each of the ten piles over and write on the back of each paper, under the numbers already there, at the left hand edge, its score (i. e., 1, 2, 3, 4, 5, 6, 7, 8, 9, or 10). SHUFFLE.

Here the assumption was that there were approximately an equal number of specimens representing each of the five groups. For this reason the directions were given for the guidance of the judges in such a way as to rule out of account their personal opinions as to the absolute quality of the specimens. What was wanted was their judgment as to the relative qualities of the specimens.

There were now five and twelve, or in all seventeen, judgments recorded for each specimen. With the aid of an adding machine these seventeen judgments were averaged, counting the digits as tens (thus 6 would count as 60,) and

counting the values of the five groups of the original judgments as 90, 70, 50, 30 and 10. The values of the two hundred and five specimens, secured by thus adding their points, were then arranged in order from the best to the worst.

From the two hundred and five specimens, so evaluated, forty specimens were now selected, such that their point values differed by approximately equal amounts. By this procedure it was believed that a series of specimens was secured, ranging, by approximately equal steps in value, from the very poorest, of approximately zero value, to the very best, a specimen of perfect shorthand, written by an expert, the value of which is approximately one hundred.

These forty specimens were then engraved (see appendix) and five hundred and fifty duplicate sets struck off, which were mailed to as many different teachers of shorthand all over the United States, with the request that they judge them in accordance with the following directions:

*To Gregg Shorthand Teachers*:

For nearly two years I have been working on a scale for measuring the quality of Shorthand Penmanship. Now I have reached the stage in my work when I must send this appeal for co-operation to 500 teachers of Gregg Shorthand.

Some time in January the completed scale will be ready. A copy will be sent you gratis in return for your co-operation.

I wish to have the 40 specimens sent you herewith graded from the standpoint of their quality or general merit as shorthand penmanship. Will you please co-operate with me in this work by giving me the benefit of your judgment?

THE FOLLOWING PLAN IS SUGGESTED:

1. Sort the forty specimens into five groups of about eight specimens each, as follows: VERY POOR, POOR, MEDIUM, GOOD, VERY GOOD.

2. Now take each of these groups in turn and divide it into the better and worse halves. This will give you ten groups of four specimens each.

3. Take up one group after the other and arrange the four specimens from the standpoint of their merit as shorthand penmanship.

4. When you have gone through each group in this way you will have arranged the entire forty specimens in such a manner that the best is on the top and the worst at the bottom, with the others graduated all the way between.

5. Put the specimens, arranged in this order from best to worst, in the return envelope, and post.

May I assure you your co-operation in this matter will be greatly appreciated. Sincerely yours,
(Signed)

When the time arrived that the judgments should be in hand, it was found that 250 teachers had responded by arranging the specimens in the order of their quality from the best to the worst, and returning them in this order. A considerable number of judges reported less promptly. Fifty of these were later included in the study, making 300 in all. The resulting data are given in a table† in which the judges are indicated by the numbers at the left hand margin, from 1 to 300, and the ranks by the numbers at the

TABLE IV
AVERAGE RANK OF 40 SPECIMENS OF SHORTHAND

| No. of Specimen | Average Rank | No. of Specimen | Average Rank |
|---|---|---|---|
| 11* | 1.872 | 4 | 20.408 |
| 32* | 3.164 | 10 | 20.672 |
| 23* | 4.260 | 19 | 20.796 |
| 24* | 6.104 | 5 | 21.148 |
| 27* | 6.988 | 9* | 21.180 |
| 28* | 9.282 | 37 | 25.484 |
| 26 | 10.728 | 36* | 25.516 |
| 17 | 10.960 | 40 | 28.020 |
| 38* | 11.052 | 8* | 29.628 |
| 3 | 12.152 | 14 | 31.156 |
| 2 | 12.592 | 25 | 31.164 |
| 13* | 13.744 | 1 | 32.480 |
| 15 | 14.512 | 6* | 32.556 |
| 12 | 15.392 | 31 | 32.980 |
| 34* | 15.692 | 7 | 33.464 |
| 20 | 16.768 | 39 | 33.492 |
| 18 | 17.072 | 29 | 34.076 |
| 30 | 17.912 | 16 | 34.220 |
| 22 | 17.964 | 35* | 34.620 |
| 33* | 18.760 | 21* | 39.812 |

top of the table, from 1 to 40. The main body of the table is made up of numbers which identify the several specimens, to which the numbers from 1 to 40 were assigned in a purely chance order. To illustrate, if judge number 1 considered specimen 10 to rank thirteenth, then "10" would be written opposite 1 and under 13.

† This table is not reproduced here. Anyone who is interested in these original data will find them in the author's dissertation on file in the library of the Johns Hopkins University.
* Indicates the specimens included on the scale.

After the results were compiled for the first 250 judges to report, the average rank of each of the specimens was computed with the aid of a calculating machine. This was done in order to ascertain the relative values or ranking of the specimens. The result is shown in Table IV.

The next step was to count the number of judges who considered each specimen superior to the next best, and then, with the aid of the table given by Thorndike in his "Mental and Social Measurements" (pp. 122, 123, Table 23) to ascertain the differences in the values of the specimens in terms of P. E. This method is based upon the theory that "equally often noticed differences are equal." The amounts of difference are shown in Table V.

In connection with his explanation of this method Thorndike says: "The method as a whole presupposes that the observations are made by judges of some competence. Its precision depends upon how competent they are." Something needs, therefore, to be said with reference to the judges employed in this work.

When the Gregg Publishing Company called upon teachers of shorthand to lend their aid in the construction of shorthand scales and tests, about four hundred responded, expressing their willingness to try such tests and cooperate in their development. This was a very gratifying response, and would seem to indicate on the part of these teachers some degree of understanding of the nature and value of standard measures, as well as a spirit of willingness. Believing that no more capable, intelligent, and willing body of judges could be found, the writer decided to invite the cooperation of these teachers in judging the specimens. The 150 additional sets were sent, for the most part, to shorthand teachers in the schools of certain large cities, notably Baltimore and Los Angeles. A few were sent to individuals known to be expert in shorthand. Many expressions of interest were received from the judges. A number reported that the work was difficult. All indications seemed to point to the fact that in general the judges performed

## TABLE V

VALUES OF THE 40 SPECIMENS

| Number of specimen | Considered better than | Number of judges in 300 | Per cent of better judgm'ts | Per cent of worse judgm'ts | Amount of difference | Value in terms of P. E. |
|---|---|---|---|---|---|---|
| 11 | 32 | 218 | 72.7 | 27.3 | .90 | 11.53 |
| 32 | 23 | 177 | 59. | 41. | .34 | 10.63 |
| 23 | 24 | 196 | 69.3 | 34.7 | .58 | 10.29 |
| 24 | 27 | 202 | 67.3 | 32.7 | .66 | 9.71 |
| 27 | 28 | 199 | 66.3 | 33.7 | .62 | 9.05 |
| 28 | 26 | 159 | 55. | 47. | .11 | 8.43 |
| 26 | 17 | 161 | 53.7 | 46.3 | .14 | 8.32 |
| 17 | 38 | 150 | 50. | 50. | .00 | 8.18 |
| 38 | 3 | 164 | 54.7 | 45.3 | .18 | 8.18 |
| 3 | 2 | 167 | 55.7 | 44.3 | .21 | 8.00 |
| 2 | 13 | 166 | 55.3 | 44.7 | .20 | 7.79 |
| 13 | 15 | 153 | 51. | 49. | .04 | 7.59 |
| 15 | 12 | 176 | 58.7 | 41.3 | .33 | 7.55 |
| 12 | 34 | 150 | 50. | 50. | .00 | 7.22 |
| 34 | 20 | 172 | 57.3 | 42.7 | .27 | 7.22 |
| 20 | 22 | 166 | 55.3 | 44.7 | .20 | 6.95 |
| 22 | 18 | 152 | 50.7 | 49.3 | .03 | 6.75 |
| 18 | 30 | 155 | 51.7 | 48.3 | .06 | 6.72 |
| 30 | 33 | 174 | 58. | 42. | .30 | 6.66 |
| 33 | 4 | 176 | 58.7 | 41.3 | .33 | 6.36 |
| 4 | 5 | 170 | 56.7 | 43.3 | .25 | 6.03 |
| 5 | 19 | 152 | 50.7 | 49.3 | .03 | 5.78 |
| 19 | 10 | 157 | 52.3 | 47.7 | .08 | 5.75 |
| 10 | 9 | 159 | 53. | 47. | .11 | 4.81 |
| 9 | 37 | 208 | 69.3 | 30.7 | .75 | 5.56 |
| 37 | 36 | 159 | 53. | 47. | .11 | 5.67 |
| 36 | 40 | 179 | 59.7 | 40.3 | .37 | 4.70 |
| 40 | 8 | 159 | 53. | 47. | .11 | 4.33 |
| 8 | 25 | 181 | 60.3 | 39.7 | .39 | 4.22 |
| 25 | 14 | 160 | 53.3 | 46.7 | .12 | 3.83 |
| 14 | 6 | 171 | 57. | 43. | .26 | 3.71 |
| 6 | 31 | 152 | 50.7 | 49.3 | .03 | 3.45 |
| 31 | 1 | 154 | 51.3 | 48.7 | .05 | 3.42 |
| 1 | 7 | 157 | 52.3 | 47.7 | .08 | 3.37 |
| 7 | 39 | 152 | 50.7 | 49.3 | .03 | 3.29 |
| 39 | 29 | 161 | 53.7 | 46.3 | .14 | 3.26 |
| 29 | 35 | 173 | 57.7 | 42.3 | .29 | 3.12 |
| 35 | 16 | 153 | 51. | 49. | .04 | 2.83 |
| 16 | 21 | 291 | 97. | 3. | 2.79 | 2.79 |
| 21 | | | | | 0 | 0 |

their work in a most careful and intelligent manner. The geographical distribution of judges is also quite satisfactory,* representing 38 States and Canada.

Table V gives the values of the 40 specimens of shorthand in terms of P. E. From inspection of this table it now became possible to select specimens in such a way that they would differ from one another in value by approximately five points, on a scale of 100 points. Thus were selected the sixteen specimens whose values appear on Table VI. This

TABLE VI

VALUES OF SPECIMENS INCLUDED IN SCALE

| Specimen No. | Is considered better than No. | Number of judges out of 300 | Per cent of better judgments | Per cent of worse judgments | Amount of difference | Values of specimens in terms of P. E. | Differences times 8.25 | Value in terms of nearest whole number | Values assigned on scale |
|---|---|---|---|---|---|---|---|---|---|
| 11 | 32 | 218 | 72.7 | 27.3 | .90 | 11.41 | 94.13 | 94 | 95 |
| 32 | 23 | 177 | 59. | 41. | .34 | 10.51 | 86.71 | 87 | 90 |
| 23 | 24 | 196 | 65.3 | 34.7 | .58 | 10.17 | 83.90 | 84 | 85 |
| 24 | 27 | 202 | 67.3 | 32.7 | .66 | 9.59 | 79.12 | 79 | 80 |
| 27 | 28 | 199 | 66.3 | 33.7 | .62 | 8.93 | 73.67 | 74 | 75 |
| 28 | 38 | 184 | 61.3 | 38.7 | .42 | 8.31 | 68.56 | 69 | 70 |
| 38 | 13 | 198 | 66. | 34. | .61 | 7.89 | 65.09 | 65 | 65 |
| 13 | 34 | 179 | 59.7 | 40.3 | .37 | 7.28 | 60.06 | 60 | 60 |
| 34 | 33 | 212 | 70.7 | 29.3 | .81 | 6.91 | 57.01 | 57 | 55 |
| 33 | 9 | 186 | 62. | 38. | .45 | 6.10 | 50.32 | 50 | 50 |
| 9 | 36 | 201 | 67. | 33. | .65 | 5.65 | 46.61 | 47 | 45 |
| 36 | 8 | 207 | 69. | 31. | .74 | 5.00 | 41.25 | 41 | 40 |
| 8 | 6 | 201 | 67. | 33. | .65 | 4.26 | 35.14 | 35 | 35 |
| 6 | 35 | 194 | 64.7 | 35.3 | .56 | 3.61 | 29.78 | 30 | 30 |
| 35 | 21 | 294 | 98. | 2. | 3.05 | 3.05 | 25.16 | 25 | 25 |
| 21 | | | | | 0 | 0 | 0 | 0 | 0 |

table should be read as follows: Specimen No. 11 is considered better than specimen No. 32 by 218 out of 300

* Arizona, 3, Alabama, 1, California, 23, Colorado, 5, Connecticut, 3, Delaware, 1, Florida, 2, Idaho, 1, Illinois, 32, Indiana, 7, Iowa, 9, Kansas, 3, Minnesota, 10, Montana, 1, Maine, 8, Massachusetts, 19, Missouri, 3, Michigan, 18, Mississippi, 1, Maryland, 27, Nebraska, 6, New Mexico, 1, North Dakota, 1, New Hampshire, 2, New Jersey, 13, New York, 26, Ohio, 9, Oregon, 4, Oklahoma, 1, Pennsylvania, 19, Rhode Island, 4, South Dakota, 1, Tennessee, 1, Texas, 5, Vermont, 4, Virginia, 2, Washington, 8, Wisconsin, 15, Canada, 1. Total, 300.

judges; that is, 72.7 per cent of the judges consider it better, or 27.3 per cent consider it worse. By reference to the table it is found that 27.3 per cent of worse judgments corresponds to a difference in value of .90 P. E. This, added to the value of No. 32 (10.51) gives No. 11 a value of 11.41. In order to raise these values to a scale of 100 points, one P. E. is taken to be 8.25 points. All the values as given in the seventh column of the table are therefore multiplied by 8.25 to get the values in the eighth column. In the case of No. 11 this value is 94.13. The nearest whole number is 94. The value assigned this specimen on the scale is 95.

Specimen number 21 was written by a person who knew nothing of shorthand. It is clearly intended to be shorthand, though illegible as such. Its value is assumed to be zero.

It may, perhaps, be noticed that the values assigned the specimens in Table V and Table VI vary somewhat. This fact requires an explanation. It is due to the fact that in the latter table the specimens are taken, not in the order of their rank, but in some of the steps one or more specimens are passed over. In the first table specimen 28 is compared with 26, and considered superior by 53 per cent of the judges. In the latter table 28 is compared with 38, and found superior by 61.3 per cent of the judges, making the difference in value between 28 and 38 in the latter table. .42 P. E., whereas in the former table their difference is the sum of three steps of difference, .11, .14, and .00, or .25.

The fact of the existence of these differences might at first sight seem to invalidate the method. In reality the facts appear to justify the conclusion that the judging has in this case been very well done. A comparison of the values assigned the specimens in the two tables will show that the largest variation is .31 P. E. The fact that this variation is so small argues the care and precision with which the work of the judges has been done. In any event, the variations are so small, as they affect the scale, that they will not mar its practical value. In other words, the differences

are so small as probably to fall below the power of human discernment.

The sixteen specimens so selected were finally arranged for publication in the form of a scale, a copy of which, together with a copy of the Class Record Sheet prepared for use with the same, is included in the appendix. Copies of the scale and record sheets were promptly sent to the three hundred teachers and others who had judged the specimens, with the request that they use the scale as per directions given on the Class Record Sheet, and report the results on a duplicate of said sheet. Such reports were secured for 1627 cases. A study of these results is given in the Tables VII and VIII and Figures 4 and 5.

The graphs indicate a normal distribution of the scores for speed, but a very much skewed distribution of scores for quality, with a marked tendency to give too many of the very high scores, 85, 90, and 95. This is probably due largely to the fact that those who have used this scale are for the most part persons who have not had previous training in the use of a quality scale. It is probable, furthermore, that the habit of giving grades of 90 to 95 in high schools, carries over here in spite of the scale.

The medium scores for quality (77.4 and 81.5) show an improvement of only 5.3 per cent in one year's work, whereas the median scores for speed (45.8 and 64.4) show an improvement of 46.1 per cent in one year.

## TABLE VII

### Quality of Pupils' Shorthand Notes

| Scale Scores | No. of cases Group 1 | No. of cases Group 2 | No. of cases Both groups |
|---|---|---|---|
| 95 | 92 | 75 | 167 |
| 90 | 121 | 89 | 210 |
| 85 | 147 | 129 | 276 |
| 80 | 142 | 82 | 224 |
| 75 | 144 | 74 | 218 |
| 70 | 96 | 43 | 139 |
| 65 | 71 | 26 | 97 |
| 60 | 48 | 19 | 67 |
| 55 | 40 | 15 | 55 |
| 50 | 29 | 17 | 46 |
| 45 | 20 | 15 | 35 |
| 40 | 25 | 18 | 43 |
| 35 | 17 | 8 | 25 |
| 30 | 8 | 4 | 12 |
| 25 | 9 | 4 | 13 |
| under 25 | 0 | 0 | 0 |
| Total No. cases. | 1009 | 618 | 1627 |
| Median scores.. | 77.4 | 81.5 | |

(Note.—In this and the following table Group 1 had 29 weeks of instruction; Group 2, 66 weeks.)

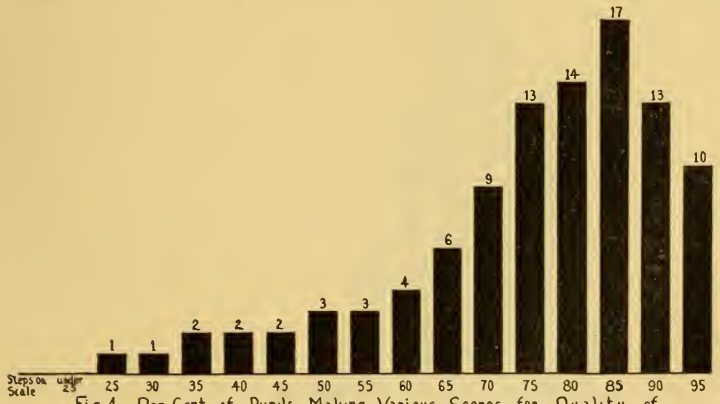


Fig. 4. Per Cent of Pupils Making Various Scores for Quality of Shorthand Penmanship. 1627 Cases

## TABLE VIII

### Speed of Pupils' Shorthand Notes

| Scores in words per min. | No. of cases Group 1 | No. of cases Group 2 | No. of cases Both groups |
|---|---|---|---|
| 131-140 | 1 | 0 | 1 |
| 121-130 | 0 | 1 | 1 |
| 111-120 | 1 | 4 | 5 |
| 101-110 | 9 | 10 | 19 |
| 91-100 | 5 | 28 | 33 |
| 81- 90 | 9 | 80 | 89 |
| 71- 80 | 42 | 99 | 141 |
| 61- 70 | 106 | 154 | 260 |
| 51- 60 | 196 | 150 | 346 |
| 41- 50 | 315 | 64 | 379 |
| 31- 40 | 230 | 24 | 254 |
| 21- 30 | 89 | 3 | 92 |
| 11- 20 | 4 | 1 | 5 |
| 0- 10 | 0 | 0 | 0 |
| Total No. of cases | 1009 | 618 | 1627 |
| Median scores | 45.8 | 64.4 | |

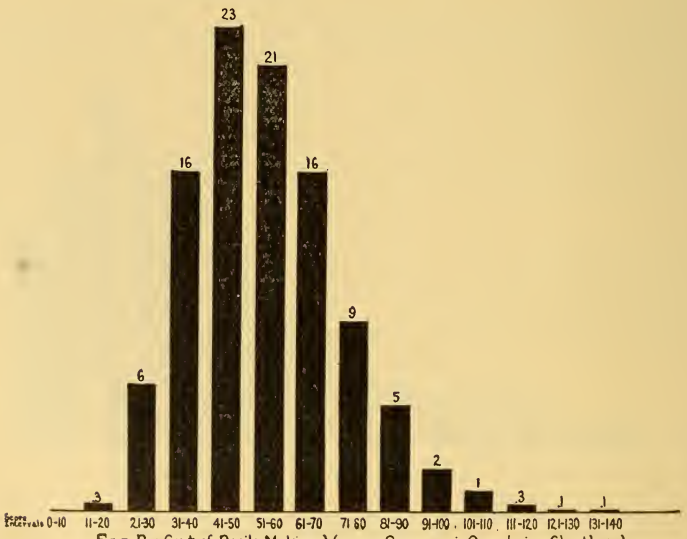


Fig. 5. Per Cent of Pupils Making Various Scores for Speed in Shorthand Penmanship, in Words per Minute. 1627 Cases.

Table IX shows the relationship between speed and quality of notes for 700 cases, including both first and second year pupils. The coefficient of correlation has been found to be .22 with a P. E. of .02. This may be interpreted as indicating that the positive relationship is present, but not in any very marked degree. If in our high schools the improvement during the second year's work were as great for quality as for speed, the degree of relationship would probably be found to be considerably higher than that indicated by the coefficient .22.

TABLE IX

RELATIONSHIP BETWEEN SPEED AND QUALITY OF SHORTHAND NOTES

| Scores for Quality | Scores for Speed | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 11–20 | 21–30 | 31–40 | 41–50 | 51–60 | 61–70 | 71–80 | 81–90 | 91–100 | 101–110 | 111–120 |
| 95 | | 5 | 15 | 18 | 11 | 15 | 14 | 4 | 1 | 1 | |
| 90 | | 9 | 16 | 25 | 29 | 19 | 2 | 4 | 3 | | |
| 85 | | 13 | 15 | 38 | 29 | 16 | 6 | 6 | 3 | | |
| 80 | | 3 | 24 | 24 | 22 | 17 | 4 | 3 | 1 | | |
| 75 | 1 | 4 | 19 | 21 | 17 | 18 | 4 | 1 | 2 | 1 | |
| 70 | 1 | 5 | 17 | 16 | 15 | 4 | 3 | 1 | | | |
| 65 | | 4 | 7 | 9 | 8 | 1 | | 1 | | | |
| 60 | 1 | 1 | 8 | 4 | 5 | 4 | | 1 | | | |
| 55 | | 1 | 5 | 6 | 3 | 2 | 4 | | | | |
| 50 | | 2 | 5 | 2 | 1 | | 3 | | | | |
| 45 | | 2 | 7 | 4 | 1 | 2 | | | | | 1 |
| 40 | | 3 | 7 | 4 | 1 | | 2 | | | | |
| 35 | | 4 | 3 | 2 | | | | | | | |
| 30 | | | 1 | 2 | 1 | | | | | | |
| 25 | | | 1 | | | | | | | | |

No. of cases: 700.
Coefficient of correlation .22.
P. E. .02.

## VI. THE CONSTRUCTION OF A SCALE FOR KNOWLEDGE OF THE SYSTEM

How shall the pupil's knowledge of the system of shorthand be measured? In the first effort to devise a measure for knowledge of the system, a collection was made of such questions as teachers of shorthand are accustomed to ask on their "examinations." The purpose was to select a few of such questions or exercises calling for knowledge of the system, and to form preliminary tests from which the difficulties or values of the several exercises might be ascertained, after which such of them as seemed suitable could be made into one or more forms of a test for knowledge of the system of Gregg Shorthand. After the collection was made, however, the result was such a chaos that when an alternate plan suggested itself, this original plan was given up. The plan adopted appeared to hold out the promise of being, if not easier of accomplishment, certainly the more useful of the two.

This second plan was to take the 1,000 commonest words as given in the Ayres Spelling Scale, make them up into preliminary vocabulary tests in shorthand, and from these, ascertain the difficulties or values of the 1,000 words from the standpoint of shorthand writing, which would make it possible to arrange these words in a Shorthand Scale, similar in style to the spelling scales.

Further consideration, however, showed the necessity for a revision or enlargement of this plan, for it was recognized that knowledge of shorthand includes the ability to write *phrases* as well as words. For this reason it seemed necessary that such a scale should include the values of phrases as well as words. Accordingly, the first impulse was to include with the 1,000 commonest words the approximately 570 phrases given in the Manual. Investigation showed, however, that at least some of these were of rather infrequent

occurrence, and a knowledge of them, therefore, not very important. It was concluded that an investigation should be made in the effort to secure a list of the 500 most common phrases in actual use. Inasmuch as this investigation was of the same nature as that of Ayres leading to his list of 1,000 commonest words, it may be well to describe, very briefly, both investigations.

During the years 1914 and 1915 the Division of Education of the Russell Sage Foundation conducted a study with the object of developing a scale for measuring the attainment of school children in spelling. For this purpose an effort was made to select the commonest words in the English language. This was accomplished by combining the results of four investigations, each of which aimed at identifying the commonest words.

These four studies were: First, Rev. J. Knowles, London, England, 1904, "The London Point System of Reading for the Blind," including a tabulation of 100,000 words from the Bible and various authors; second, R. C. Eldridge, Niagara Falls, 1911, "Six Thousand Common English Words," including a tabulation of 43,989 words; third, Russell Sage Foundation Monograph, 1913, "The Spelling Vocabularies of Personal and Business Letters, with a tabulation of 23,629 words; fourth, Cook and O'Shea, 1914, "The Child and His Spelling," including a tabulation of some 200,000 words.

By combining these four studies, including a total of about 368,000 words, written by more than 2,500 different persons, it was found possible to select a list of 1,000 words with the highest frequencies, which may therefore be regarded as the commonest words in the English language, so far as our information goes.* The thousand words constitute about 92 per cent of ordinary composition. These words were arranged in the form of a scale and published in a monograph entitled, "Measurement of Ability in Spelling," which

* More recently Thorndike's "Word-Book for Teachers" has been published, giving the 10,000 most common words, and superseding all earlier studies.

has proved to be a very important contribution to the teaching of spelling. It is believed that the teaching of shorthand may be no less aided by the use of these same words in the form of a shorthand scale, especially since these words will constitute so large a part (92 per cent) of all that the stenographer will ever be called upon to write.

An investigation, similar to those which were combined in the study just described, was made for the purpose of deriving a list of the most common phrases in such literature as stenographers are accustomed to "take." The material used for this purpose comprised the following books: the "Legend of Sleepy Hollow" and "Rip Van Winkle" from Irving's "Sketch Book;" "Gregg Speed Studies;" "Alice's Adventures in Wonderland," by Lewis Carroll; "Graded Readings in Gregg Shorthand," by Alice M. Hunter; "The Art of Making a Speech;" "Gregg Shorthand Reader;" and two popular dictation books, containing modern business letters and literary matter, "Dictation Course in Business Literature, Book I," Reigner, the H. M. Rowe Co., and Eldridge's "Shorthand Dictation Exercises," by the American Book Company.

This body of material is estimated at approximately 500,000 words. Much of the material may be had from the publishers of Gregg Shorthand in the form of expert notes. It was a simple matter to tabulate the phrases as used by the writers of these notes. The authority of the publisher's experts is back of the selection of the phrases. Otherwise there might be some difference of opinion as to what words should be "phrased." In the case of the material for which no shorthand notes are published, the plan was to have an expert teacher of shorthand underscore with a pencil the groups of words which should be phrased in writing. Clerical workers then went over these sheets and counted the phrases as underscored.

6,418 different phrases were tabulated, with the number of appearances of each—a total of 41,421 phrases. Incidentally, the great importance of phrasing for success in

shorthand work may be seen from the fact that there occurs on the average one phrase to every ten or twelve words.

It was then discovered that by selecting from the entire mass of material all phrases which had been found to occur fourteen or more times, a list of 500 phrases was secured, which may with some justification be regarded as the 500 commonest phrases in the English language, or at least in those forms of literature included in the investigation. Approximately three-fifths of this material consists of business letters. The remainder is of miscellaneous sorts, including literature, newspaper editorials, extracts from addresses, and so forth.

It should be noted that in counting the frequencies of the phrases included in the 500, the frequencies of other less common phrases, of which certain of these form a part, were added. For example, the phrase, "and have" was credited also for all occurrences of such phrases as, "and have the," "and have you," etc. This was done for the reason that it was felt that only by so doing would the several phrases be given the importance that they deserve.

Those who are acquainted with shorthand will not need an explanation of the fact that many combinations of words are included in the list which are not phrases in the ordinary sense of the word "phrase" as used in grammar. For the purpose of this investigation any group of words written "joined," or together, is regarded as a phrase.

The total of the frequencies of the 500 commonest phrases is 32,353, out of a total of 41,421 phrases tabulated, or 78 per cent. This means that pupils who master the 500 phrases will be able to write not less than 78 per cent of all phrases they meet, as a result of this practice alone. The fifty commonest phrases have a total frequency of 16,903, or about 41 per cent of all the phrases tabulated.

The 1,000 commonest words and 500 commonest phrases were arranged in ten Vocabulary Tests, (for which see appendix) known as C-1, C-2, . . . C-10, including 100 words and 50 phrases to each test. The words and phrases for the

several tests were selected in a purely chance order, by taking for test C-1 every tenth word or phrase, for C-2 the words and phrases next following, and in like manner for the other eight tests. These tests simply give the words and phrases in columns, with spaces opposite for the student's outlines. On the first page of each test will be found all the directions required by the teacher.

It is believed that the material included in these ten tests will ultimately have great value as a body of drill material for the teacher's use. Inasmuch as these words make up approximately 92 per cent of ordinary composition, and the phrases 78 per cent of all phrases commonly met with, it will be found a very effective method of teaching, to drill this small body of material until thoroughly mastered by the pupil, so that it may be written rapidly and correctly. This will improve speed of writing, and will go a long way in securing legibility.

In order to secure data for the calculation of the values or difficulties of the words and phrases, teachers of shorthand were invited to cooperate in the construction of the scale by using the tests with their classes and returning them for scoring and tabulation.

In order that the tests might be scored in accordance with a uniform procedure, the scoring was not left to the teachers, but instead the teachers were requested to send in the tests themselves, after having scored them for their own purposes. The tests were given just before the close of school in June, 1921. 2,818 tests were received, an average of 281.8 for each of the ten forms of the C tests. These were scored in accordance with the following directions:

STANDARD DIRECTIONS FOR SCORING THE C TESTS

1. All words and phrases are to be scored strictly in accordance with the Gregg system, as per key.*
2. Where the key gives two forms, either should be counted correct.
3. The dot for "h" on words like "had" may or may not be used. Count is correct with or without the dot.

* The key was prepared by a committee of experts appointed by the Gregg publishers, and is regarded as authoritative.

4. Capital letters not indicated by „, counted wrong.
5. Whenever the intention of the writer was correct, give full credit, even though the word is poorly written. This is not a test for quality of writing.
6. If the word or phrase is so poorly written that you cannot be sure the writer had the correct thing in mind, count it wrong.
7. Pay no attention to other marks made by teachers. Only the marks made in our own scoring will be counted. Use a blue pencil.
8. The first consonant should be reasonably near the line of writing. One-sixteenth of an inch is reasonably near. If further from the line of writing, count it wrong. (This rule does not apply to such consonants as s, x, w, h, and sh.)

In accordance with these standard directions, three different clerical helpers shared in the work of scoring tests C-1, C-2, C-3, C-4 and C-5, while the remaining five forms were all scored by a single person. The median number of correct responses on the first five tests was 116.4, while on the last five it was 117.2. This indicates a variation of eight-tenths of a point in the scoring of the tests by different persons, showing that the scoring of vocabulary tests is more objective than might have been supposed. This argument is based on the assumption that the ten forms of the C test are of equal difficulty. Inasmuch as each form represents a purely random selection of 150 elements from a list of 1,500, the assumption seems a perfectly rational one.

A study of the following table appears to the writer to justify these conclusions:

1. That the ten forms of the C tests are approximately equal in difficulty.
2. That the work of different scorers is satisfactorily objective.
3. That the number of cases is large enough to insure the reliability of the norms within three or five per cent. The extreme variation between the medians is found between C-1 and C-4, 8.5 points, or 5.7 per cent of the total 150 points.

TABLE X

NUMBER OF CASES AND MEDIAN SCORES ON THE C TESTS
(2818 CASES)

| | No. of cases in different groups by years | | | | Median scores for groups who had studied shorthand the time indicated, in years. | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 1½ | 2 | All | 1 | 1½ | 2 | All groups |
| C- 1 | 158 | 162 | 45 | 365 | 107.2 | 115.9 | 115.5 | 111.7 |
| C- 2 | 144 | 103 | 45 | 292 | 110.6 | 122.3 | 115. | 115.3 |
| C- 3 | 127 | 85 | 47 | 259 | 107.9 | 121.5 | 118.3 | 115.1 |
| C- 4 | 115 | 95 | 44 | 254 | 115. | 123.9 | 122.1 | 120.2 |
| C- 5 | 138 | 81 | 54 | 273 | 114. | 125.3 | 122.6 | 119.5 |
| C- 6 | 114 | 79 | 62 | 255 | 113.7 | 121.2 | 112.1 | 115.7 |
| C- 7 | 108 | 91 | 67 | 266 | 113.6 | 124.5 | 121.8 | 120. |
| C- 8 | 108 | 93 | 89 | 290 | 111.2 | 123.4 | 119.4 | 119. |
| C- 9 | 167 | 79 | 52 | 298 | 112.6 | 122. | 117.5 | 116. |
| C-10 | 133 | 80 | 53 | 266 | 112.4 | 121.9 | 114. | 115.4 |
| Avg. 1-5 | 136 | 105 | 47 | 288 | 110.9 | 122. | 118.7 | 116.4 |
| Avg. 6-10 | 126 | 80 | 65 | 275 | 112.7 | 122.6 | 117. | 117.2 |

The distribution of ability in knowledge of the system as measured by the C tests is indicated on the following graph.

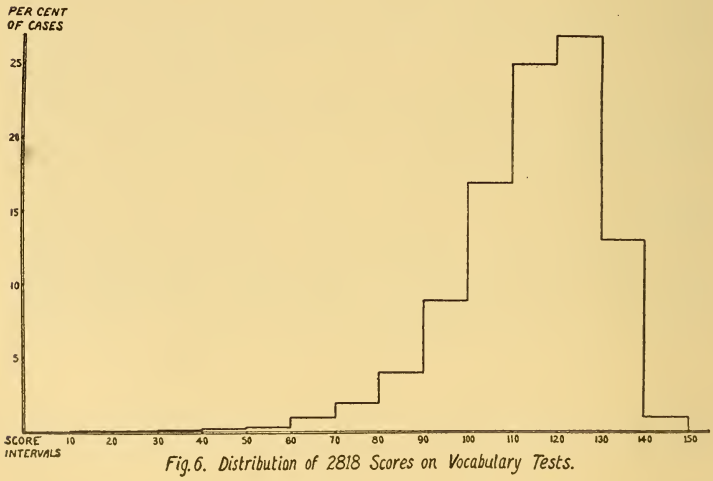


*Fig. 6. Distribution of 2818 Scores on Vocabulary Tests.*

It will be noticed that there is a scattering .9 of one per cent of the 2,818 cases who make scores ranging from 0 to 60 per cent correct responses on the C tests. From 60 to 100

per cent or from 90 to 150 points the distribution shows a fairly close approximation to that of normal frequency.

The most noticeable feature of the results found for the three groups who had had shorthand instruction one year, one and one-half years, and two years respectfully, is the fact that their medians show very slight differences. The improvement from the first year to the one and one-half year group is approximately 8 per cent, while from the one to the two year group it is only 4 per cent. The fact that the second year group seems to be slightly inferior to those who had a half year less instruction, is probably to be explained as due to the selection of the schools tested. But taken with the other facts just noted, it does justify the conclusion that the second year of shorthand instruction makes very little improvement in the pupil's ability to use the system.

These facts, together with the further fact that the distributions for the different groups are very similar, are shown by the following table of quartile points. The figures indicate percentages of correct responses.

TABLE XI

QUARTILE POINTS IN PER CENT OF CORRECT RESPONSES FOR GROUPS WHO HAVE HAD INSTRUCTION THE NUMBER OF YEARS INDICATED

| | 1 yr. | 1½ yrs. | 2 yrs. | All |
|---|---|---|---|---|
| Q1 | 67 | 75 | 71 | 70 |
| Q2 | 74 | 81 | 78 | 78 |
| Q3 | 81 | 86 | 84 | 84 |

The similarity of the three curves is shown in Figure 7. The writer regards the above figures, together with the other facts that have been presented, as satisfactorily justifying the procedure which was followed in preparing the scale for knowledge of the system. This procedure we must now describe.

After all the test sheets had been carefully scored in accordance with the standard procedure already described, the number of incorrect responses to each of the 1,500 words and phrases was counted, the percentage of incorrect re-

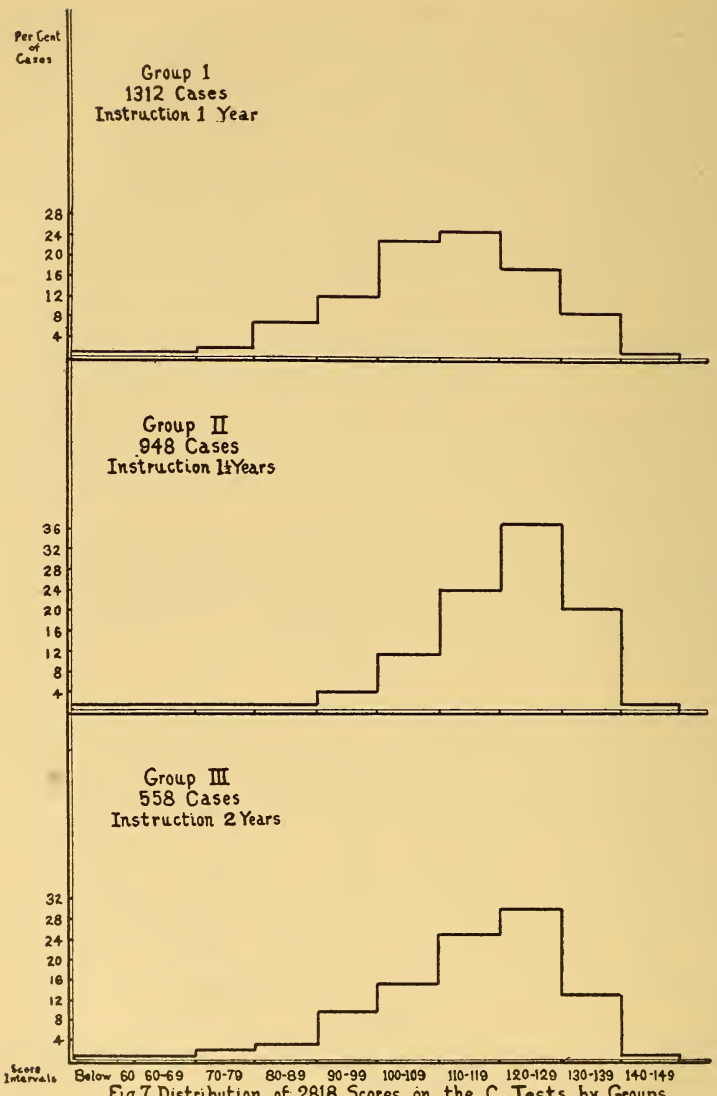


Fig. 7. Distribution of 2818 Scores on the C Tests, by Groups.

sponses to each word was calculated, and from this figure the percentage of correct responses to each word or phrase was derived. Each word and phrase was then placed in the column of the scale (for which see appendix) to which its record showed it to belong. This means, therefore, that words or phrases found in the column marked "84" for example, have been found to be of such difficulty that if a test be made up of these words and given to a class of pupils who have had from one to two years of instruction in shorthand, the class should make a median score of approximately 84 per cent, if it is up to "standard."

In arranging this scale the plan used by Ayres in constructing his Spelling Scale has been adopted. For an explanation of the theory underlying this type of scale the reader is referred to his monograph, "The Measurement of Ability in Spelling." The final paragraph of his discussion, however, applies with equal force to this scale, and is therefore quoted with the change of just a few words. "In all such testing it must be remembered that the present scale . . . will become increasingly and rapidly less reliable for measuring purposes as the children become more accustomed to *writing* these particular words *and phrases*. In proportion as these lists are used for the purposes of classroom drill, the scale will become untrustworthy as a measuring instrument. Probably the scale will have served its greatest usefulness in any locality when the school children have mastered these 1,000 words *and 500 phrases* so thoroughly that the scale has become quite useless as a measuring instrument." (Changes or additions are denoted by italics.)

Inasmuch as the differences in ability between the three separate groups tested are so small as to be negligible, no differentiation is made on the scale between the norms for those who have had shorthand instruction one year, one and one-half years, or two years. The words were placed in their respective columns on the basis of their record in all three groups combined. For those who have had shorthand but one year the norms may be regarded as approximately

one-half step too high. For those who have had instruction one and one-half or two years, the norms are probably a half step too low. It would be statistically possible, of course, to work out this scale in such a way as to make the slight differentiations which the data seem to show. To do so, however, would be to set up a foolishly elaborate statistical procedure, based on a fundamental procedure in collecting data which was not of so extended or perfect a nature as to justify the elaboration. It would, furthermore, be making distinctions of such unimportant proportions that they would be invalidated or outweighed by minor variations or errors in the procedure of giving and scoring tests. It is felt that such elaboration would lay one open to a very just charge of straining at a gnat and swallowing a camel, particularly in view of the fact that the average number of cases on which each word was scaled was only 282.

## VII. SUMMARY

We have seen that the measurement of shorthand ability involves the measurement of reading ability, speed of writing, quality of writing, and knowledge of the system. Accordingly we have constructed tests and scales as follows:

1. Test A-1, Reading Ability.
2. Tests B-1 and B-2, Speed of Writing.
3. A Measuring Scale for Gregg Shorthand Penmanship.
4. A Scale for Measuring Knowledge of Gregg Shorthand. (The data for this scale were derived from the use of ten Vocabulary Tests, C-1 to C-10.)

From the use of these tests and scales data have been collected which seem to justify the following suggestions as to the teaching of shorthand:

1. The scores for reading ability are too low for efficiency in stenographic work. More practice needs to be given in reading shorthand.
2. The second year group shows an improvement of only five per cent over the first year group in quality of shorthand penmanship. This condition calls for some remedy.
3. The question of "artistry" versus mere legibility in shorthand penmanship needs to be settled. After pupils have attained to a legible shorthand, there is little justification for spending time in the effort to get beauty.
4. The one school whose results in shorthand penmanship were most outstanding, used the device of having students who had trouble in the formation of their outlines, trace them by using tracing paper, until they got the "swing of it."
5. In knowledge of the system the second year group does no better than the first. The explanation is probably to be found in the lack of a definite goal and in scattered and wasted practice.
6. Emphasis should be placed upon drill or practice with a view to the mastery of the 1,000 commonest words and 500 commonest phrases. These make up 92 per cent of the words in English composition, and 78 per cent of the phrases.
7. Many pupils fail to write words clearly, even though they have memorized the rules involved. Emphasis should be placed upon writing correctly, rather than upon the rules of the system.
8. Tablets containing the 1,500 words and phrases appropriately arranged in drill sheets, would be an effective teaching device.
9. The data derived from the nearly 3,000 vocabulary tests, nearly 450,000 attempts to write words and phrases, show the degree of accuracy to be approximately 78 per cent. More intensive practice on a smaller number of the most common words and phrases would greatly improve this record.

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The Public School Publishing Co., Bloomington, Illinois.

# VITA

Elmer Rhodes Hoke, born at Ada, Ohio, September 16, 1892, attended the public elementary schools of York and Lancaster, Pennsylvania, and the High School at Lewistown, Pennsylvania, graduating in 1909. After four years he received the A.B. degree from Franklin and Marshall College, Lancaster, Pennsylvania, and the following year the A. M. degree from the same institution. A further course of study of three years in the Theological Seminary of the Reformed Church in the United States, at Lancaster, Pennsylvania, led to the B.D. degree in 1917. After two years of study in Johns Hopkins University he received the A. M. degree in June, 1920.

The writer acknowledges with a deep sense of gratitude the privileges enjoyed and the benefits derived from study with the following teachers in the University: Professors Edward F. Buchner, Knight Dunlap, and A. O. Lovejoy, and Doctors David E. Weglein, Fowler D. Brooks, Buford Johnson, Florence E. Bamberger, and Henry Slonimsky. He is particularly indebted to Dr. David E. Weglein for suggesting this field of study, and to Professor Edward F. Buchner and Dr. Fowler D. Brooks for continual encouragement, advice and assistance during the progress of the work.

# APPENDIX

Pupil's Score.....

# A SERIES OF TESTS IN GREGG SHORTHAND

**Arranged by Elmer Hoke, A. M.**

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## TEST A-1 *Reading Ability*

**Published by**

**THE GREGG PUBLISHING COMPANY**

**285 Fifth Avenue, New York City**

Name.....Age.....
Years Months

Race.....Sex.....Grade.....

City.....State.....Date.....

School.....Teacher.....

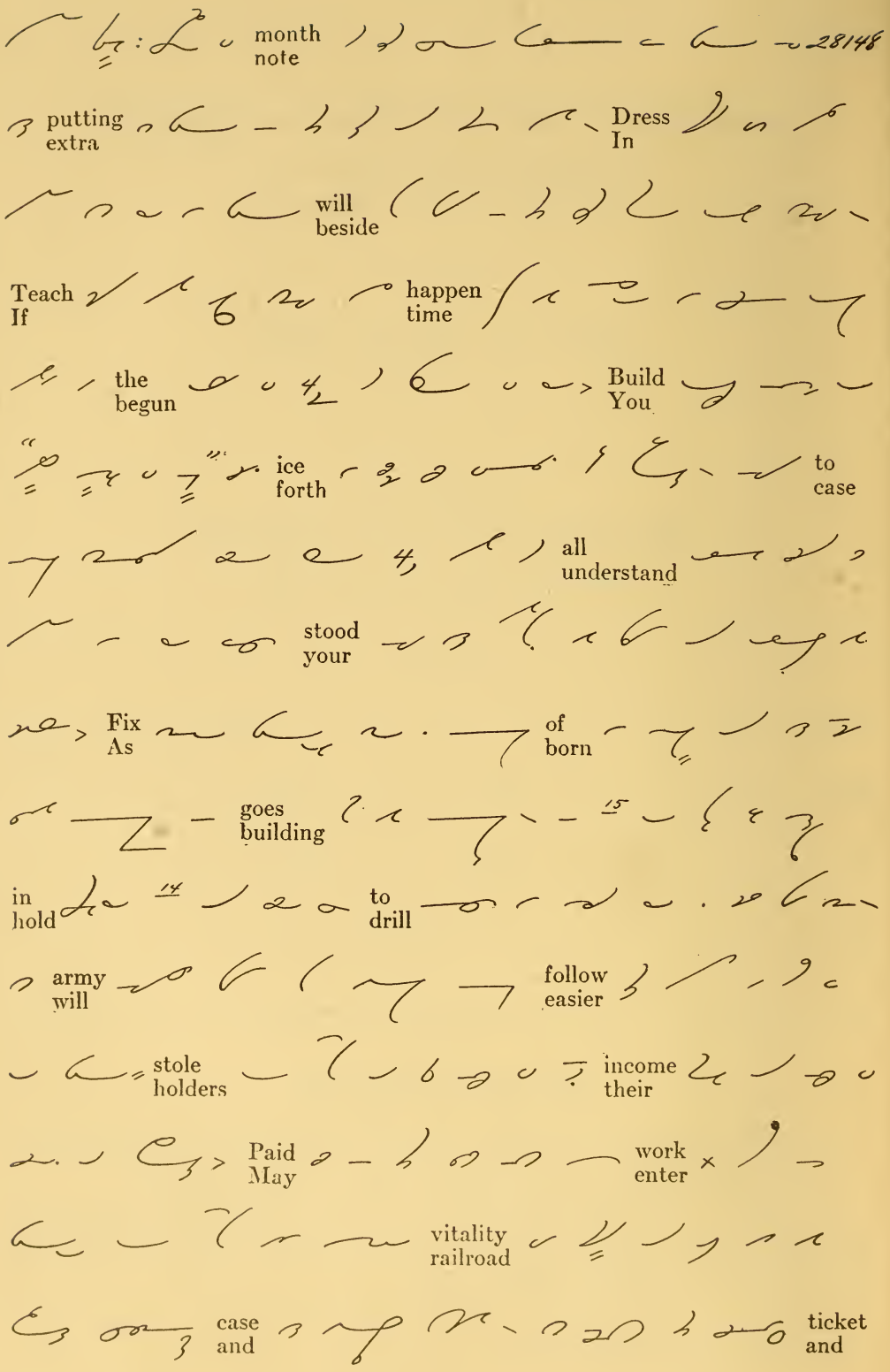
### Directions for Giving Test

1. Distribute papers face up on the desks. Ask pupils not to open papers until the signal is given.

2. Have pupils fill in blanks on the cover page or as many of them as may be desired.

3. Then say: "On the inside of this folder are two letters in shorthand. Read these business letters, and in each case where a choice of words is given, *underscore the correct word*, so that the letter will make sense. Accuracy is as important as speed. When I say, 'Ready, start,' open your paper and work for three minutes, until I say, 'Stop.'"

4. With watch in hand carefully keep the time; allow exactly three minutes, when the signal "Stop" should be given and papers collected.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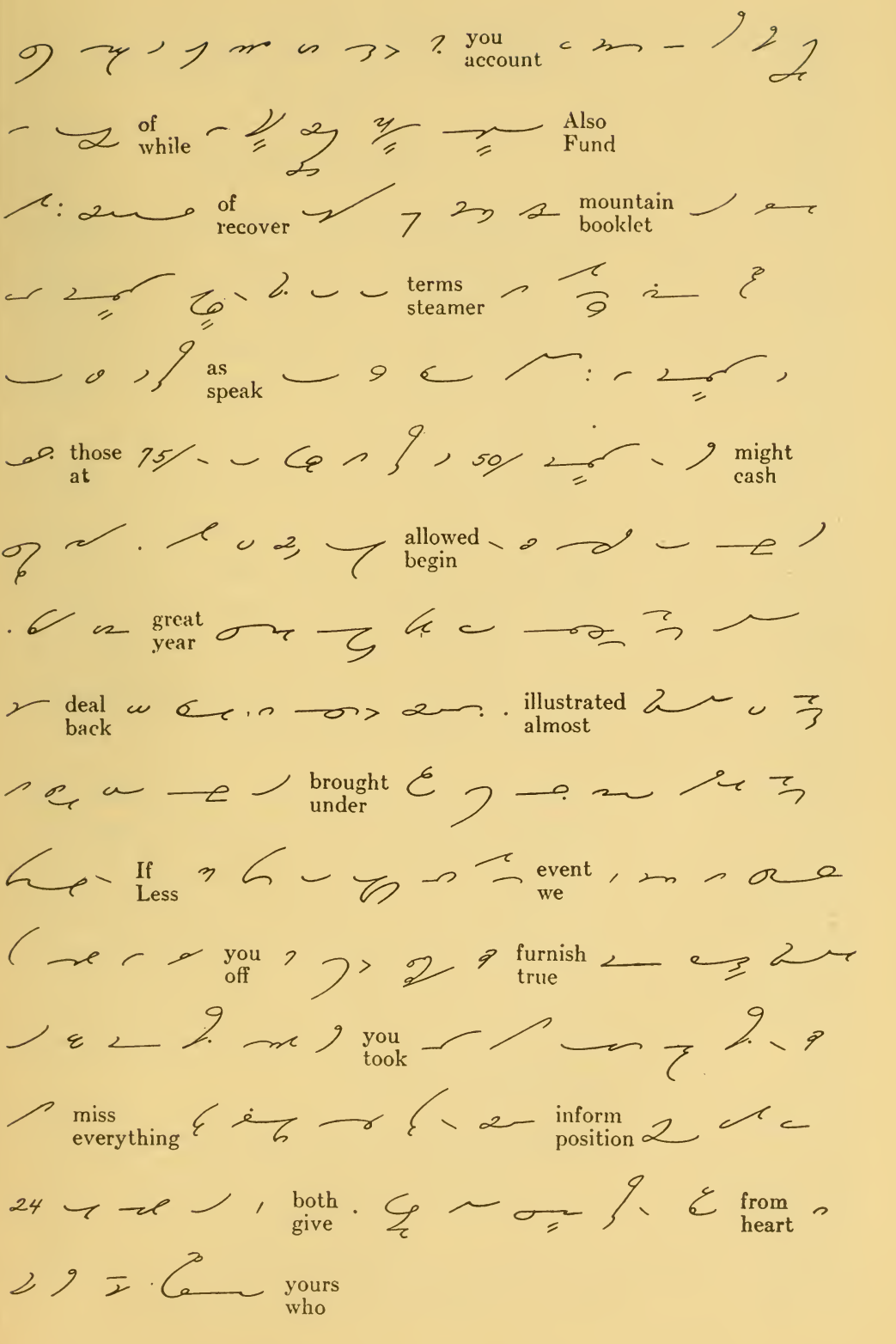
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miss everything
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from heart
yours who

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3 In
4 will
5 If
6 time
7 the
8 you
9 forth
10 to
11 all
12 your
13 As
14 of
15 building
16 in
17 to
18 will
19 easier
20 holders
21 their
22 May
23 work
24 vitality
25 and
26 and
27 you
28 of
29 Fund
30 of
31 booklet
32 terms
33 as
34 at
35 cash
36 allowed
37 year
38 back
39 illustrated
40 under
41 if
42 we
43 you
44 furnish
45 you
46 everything
47 position
48 give
49 from
50 yours

# Teacher's Key to Gregg Shorthand

## Test A-1

### Directions for Scoring

In scoring these tests lay the key beside the paper and with a red pencil make a check mark on the margin of the paper opposite each wrong choice if any. The words given in this key are the words which should be underscored. If the other word is underscored, or if neither or both are underscored, it is counted wrong.

Find the number of the last choice made by reference to the number opposite that word on this key. From this number deduct twice the number of wrong choices made. Example: Suppose the last choice made is "work," No. 23. And suppose two wrong choices are made. Twice two, or four, subtracted from 23, leaves 19, the net number of correct choices.

Refer to the Class Record Sheet. Make a tally mark in the space after the number of net choices. The accompanying score may then be placed on the pupil's paper at the place indicated. The number of tally marks in each space on the Class Record Sheet may then be counted and extended to the second space, showing the number of pupils in each group. (Scores show the number of words read correctly per minute.)

Send one copy of the Class Record Sheet to the

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285 Fifth Avenue
New York City

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# CLASS RECORD SHEET

To be used with Series A Tests in Gregg Shorthand.

City.....State.....Date.....

School.....Teacher.....Grade.....

| Net Number of Correct Choices | Score | Tallies | No. of Pupils | Net Number of Correct Choices | Score | Tallies | No. of Pupils |
|---|---|---|---|---|---|---|---|
| 50 | 167 | | | 25 | 83 | | |
| 49 | 163 | | | 24 | 80 | | |
| 48 | 160 | | | 23 | 77 | | |
| 47 | 157 | | | 22 | 73 | | |
| 46 | 153 | | | 21 | 70 | | |
| 45 | 150 | | | 20 | 67 | | |
| 44 | 147 | | | 19 | 63 | | |
| 43 | 143 | | | 18 | 60 | | |
| 42 | 140 | | | 17 | 57 | | |
| 41 | 137 | | | 16 | 53 | | |
| 40 | 133 | | | 15 | 50 | | |
| 39 | 130 | | | 14 | 47 | | |
| 38 | 127 | | | 13 | 43 | | |
| 37 | 123 | | | 12 | 40 | | |
| 36 | 120 | | | 11 | 37 | | |
| 35 | 117 | | | 10 | 33 | | |
| 34 | 113 | | | 9 | 30 | | |
| 33 | 110 | | | 8 | 27 | | |
| 32 | 107 | | | 7 | 23 | | |
| 31 | 103 | | | 6 | 20 | | |
| 30 | 100 | | | 5 | 17 | | |
| 29 | 97 | | | 4 | 13 | | |
| 28 | 93 | | | 3 | 10 | | |
| 27 | 90 | | | 2 | 7 | | |
| 26 | 87 | | | 1 | 3 | | |

Send one copy of this sheet to the Gregg Publishing Company, New York City.

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Pupil's Score.....

# A SERIES OF TESTS IN GREGG SHORTHAND

**Arranged by Elmer Hoke, A. M.**

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## TEST B-1 *Speed of Writing*

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**Published by**

**THE GREGG PUBLISHING COMPANY**

**235 Fifth Avenue, New York City**

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Name.....Age.....
Years Months

Race.....Sex.....Grade.....

City.....State.....Date.....

School.....Teacher.....

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### Directions for Giving Test

1. Distribute papers face up on the desks. Ask pupils not to open papers until the signal is given.

2. Have pupils fill in blanks on the cover page, or as many of them as may be desired.

3. Then say: "On the inside of this folder there is an article of 400 words. The article is printed both in longhand and in shorthand. When I say, 'Start,' open your papers and copy the shorthand as rapidly and as neatly as possible in the space left for that purpose. I will allow exactly two minutes. No one will be able to finish. When I say, 'Stop,' raise your pencils or pens immediately."

4. With watch in hand carefully keep the time; allow exactly two minutes, when the signal, "Stop" should be given and the papers collected.

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**Note.**—The first page of Test B-2 is identical with this and will therefore not be given. Pages 2, 3 and 4 of Test B-2 are given immediately following this test and Key.

## Thinking I Can

The twentieth century formulators of business ethics have builded squarely

upon the basis that respect for the good and true begins with the pronoun of the

first person. No man can really be true to himself who has not an abiding faith

in himself. Here lies the chief corner stone of scientific salesmanship. The

first important selling transaction with which one can be identified is a three-

cornered transaction. He is the salesman, purchaser, and the thing sold. For

no salesman—and that term includes every man or woman who earns a living by

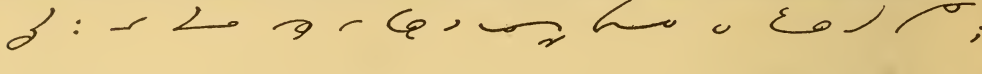
hand or head—can be a success in this life until he has succeeded in selling himself

to himself. When he has once made that confident analysis it should be easy for him

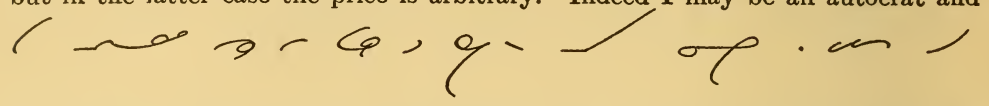
to apply the same principles to other commodities which he may offer for sale.

But there may always be this difference in offering one's wares and oneself

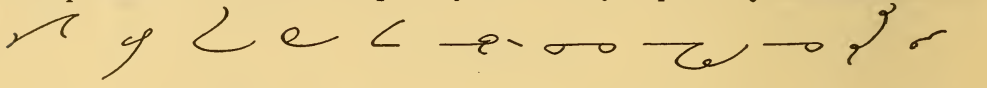
for sale: in the former case the price is regulated by the law of supply and demand;



but in the latter case the price is arbitrary. Indeed I may be an autocrat and



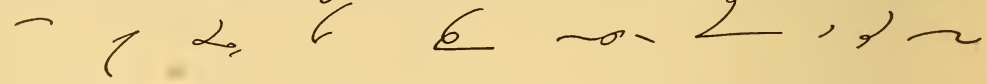
stamp whatever value I will upon myself. I may imprint my services with the



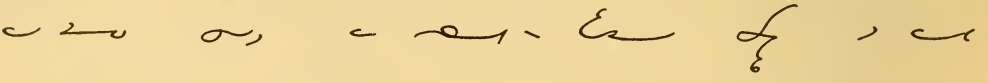
mental trade-mark of superiority and carefully store them away against the

hour of made-to-measure customers, or I may throw myself upon the bargain

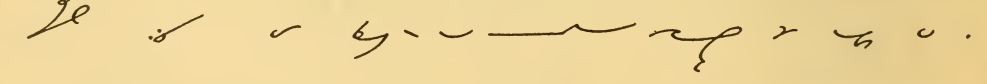
counter to be fingered over by the basement crowd. Every man is first great



or small according to his own calculation. Spiritual bankruptcy is always



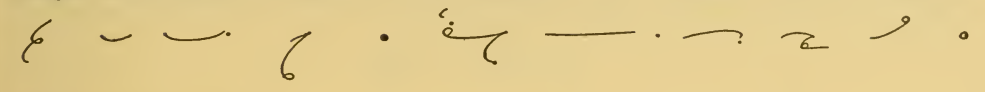
several days ahead of the sheriff. Our mental collapse is the result of a



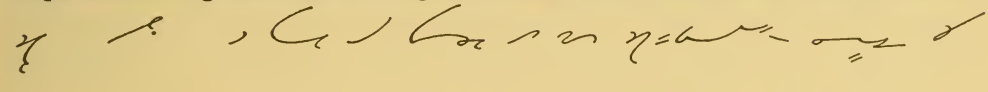
poor system of bookkeeping. We strike off our trial balance, having

underscored self-liquidating liabilities, and overlooked important assets.

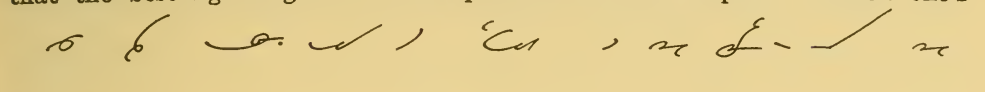
People are willing to believe a self-helping man a going concern until he



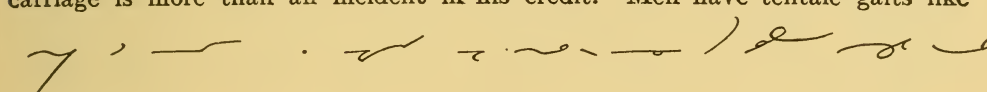
stops discounting his bills and begins to walk stoop-shouldered. Emerson said



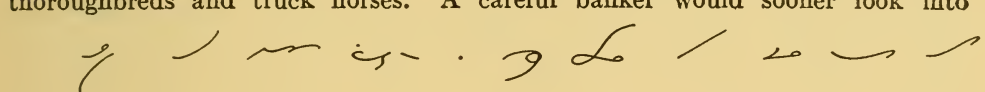
that the best lightning rod for self-protection is one's spine. Indeed one's



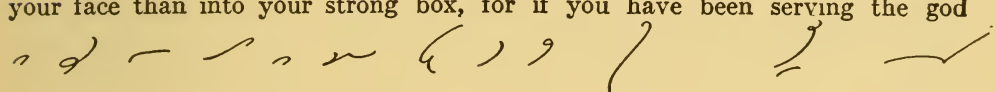
carriage is more than an incident in his credit. Men have telltale gaits like



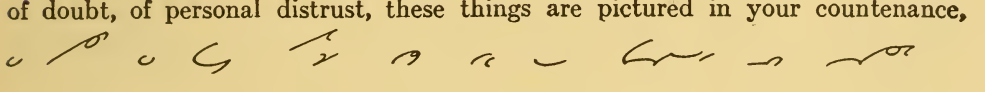
thoroughbreds and truck horses. A careful banker would sooner look into



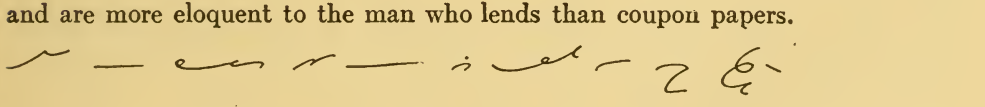
your face than into your strong box, for if you have been serving the god



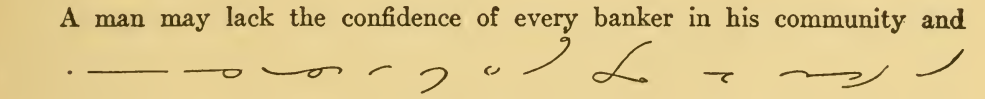
of doubt, of personal distrust, these things are pictured in your countenance,



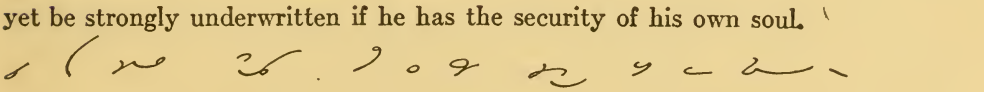
and are more eloquent to the man who lends than coupon papers.



A man may lack the confidence of every banker in his community and



yet be strongly underwritten if he has the security of his own soul.



# Teacher's Key to Gregg Shorthand Test B-1

In scoring Test B-1 find the last word written by the pupil, and refer to the following key to find the number of that word. Divide by two to find the score in words per minute; mark this score on the pupil's paper, and tally the same on the Class Record Sheet.

## Thinking I Can

1 2 3 4 5 6 7 8 9 10
The twentieth century formulators of business ethics have builded squarely
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
upon the basis that respect for the good and true begins with the pronoun of the
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42
first person. No man can really be true to himself who has not an abiding faith
43 44 45 46 47 48 49 50 51 52 53 54
in himself. Here lies the chief corner stone of scientific salesmanship. The
55 56 57 58 59 60 61 62 63 64 65 66 67
first important selling transaction with which one can be identified is a three-
68 69 70 71 72 73 74 71 76 77 78 79
cornered transaction. He is the salesman, purchaser, and the thing sold. For
80 81 82 83 84 85 86 87 88 89 90 91 92 93 94
no salesman—and that term includes every man or woman who earns a living by
95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111
hand or head—can be a success in this life until he has succeeded in selling himself
112 113 114 115 116 117 118 119 120 121 122 123 124 125 126
to himself. When he has once made that confident analysis it should be easy for
127 128 129 130 131 132 133 134 135 136 137 138 139 140 141
him to apply the same principles to other commodities which he may offer for sale.
142 143 144 145 146 147 148 149 150 151 152 153 154
But there may always be this difference in offering one's wares and oneself
155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171
for sale: in the former case the price is regulated by the law of supply and demand;
172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187
but in the latter case the price is arbitrary. Indeed I may be an autocrat and
188 189 190 191 192 193 194 195 196 197 198 199 200 201
stamp whatever value I will upon myself. I may imprint my services with the
202 203 204 205 206 207 208 209 210 211 212 213
mental trade-mark of superiority and carefully store them away against the
214 215 216 217 218 219 220 221 222 223 224 225 226 227
hour of made-to-measure customers, or I may throw myself upon the bargain
228 229 230 231 232 233 234 235 236 237 238 239 240 241
counter to be fingered over by the basement crowd. Every man is first great
242 243 244 245 246 247 248 249 250 251 252 253
or small according to his own calculation. Spiritual bankruptcy is always several
254 255 256 257 258 259 260 261 262 263 264 265 266 267 268
days ahead of the sheriff. Our mental collapse is the result of a poor system
269 270 271 272 273 274 275 276 277 278 279
of bookkeeping. We strike off our trial balance, having underscored self-
280 281 282 283 284 285 286 287 288 289
liquidating liabilities, and overlooked important assets. People are willing to
290 291 292 293 294 295 296 297 298 299 300 301 302 303
believe a self-helping man a going concern until he stops discounting his bills
304 305 306 307 308 309 310 311 312 313 314 315
and begins to walk stoop-shouldered. Emerson said that the best lightning
316 317 318 319 320 321 322 323 324 325 326 327 328 329
rod for self-protection is one's spine. Indeed one's carriage is more than an
330 331 332 333 334 335 336 337 338 339 340 341
incident in his credit. Men have telltale gaits like thoroughbreds and truck
342 343 344 345 346 347 348 349 350 351 352 353 354 355
horses. A careful banker would sooner look into your face than into your strong
356 357 358 359 360 361 362 363 364 365 366 367 368 369 370
box, for if you have been serving the god of doubt, of personal distrust, these
371 372 373 374 375 376 377 378 379 380 381 382 383 384
things are pictured in your countenance, and are more eloquent to the man who
385 386 387 388
lends than coupon papers.
389 390 391 392 393 394 395 396 397 398 399 400 . 401 402 403
A man may lack the confidence of every banker in his community and yet be
404 405 406 407 408 409 410 411 412 413 414
strongly underwritten if he has the security of his own soul.

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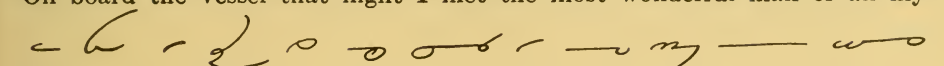
## TEST B-2

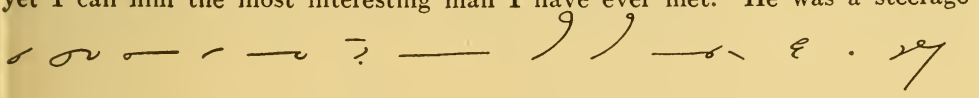
### Eyes That See

On board the vessel that night I met the most wonderful man of all my

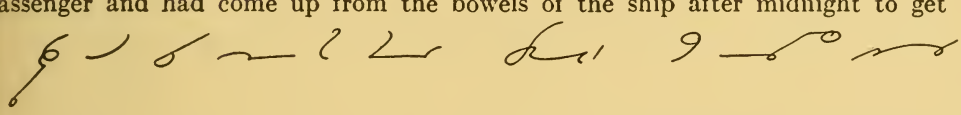


acquaintances. I cannot tell you his name for, indeed, I never knew him, and

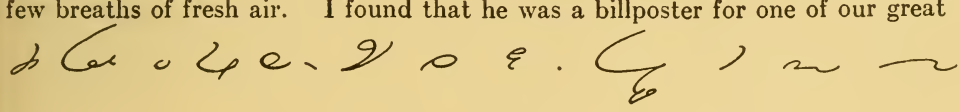
yet I call him the most interesting man I have ever met. He was a steerage



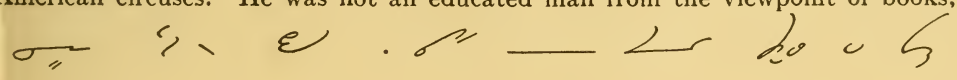
passenger and had come up from the bowels of the ship after midnight to get



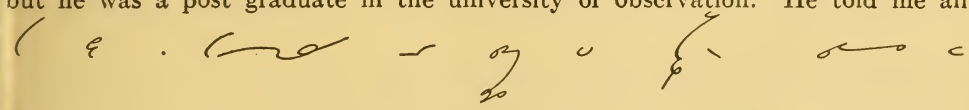
a few breaths of fresh air. I found that he was a billposter for one of our great



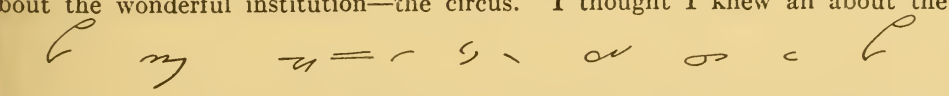
American circuses. He was not an educated man from the viewpoint of books,



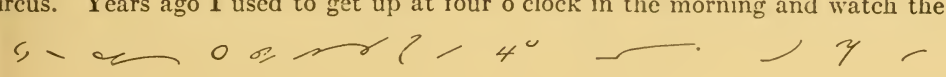
but he was a post graduate in the university of observation. He told me all



about the wonderful institution—the circus. I thought I knew all about the



circus. Years ago I used to get up at four o'clock in the morning and watch the



circus until it left the next morning at four. I thought I knew all about it.

I knew all the animals by their first names, and was on intimate terms with

the gentleman who issued the complimentary tickets for services rendered.

But I found out on this night that I really knew nothing about the circus.

When this billposter told me the clock-like precision with which this great

institution moved from one city to another; when he told me how many beeves

and potatoes were required to feed all the people; the difference in pay between

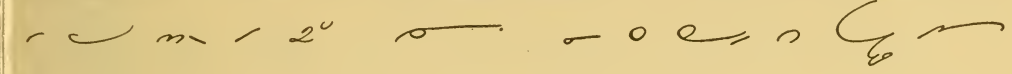
the men who drove the tent stakes and those who did the acting, how I wished

that every boy and girl in this country might learn what I learned about a circus

that night from this steerage passenger. He had been all over Europe putting up

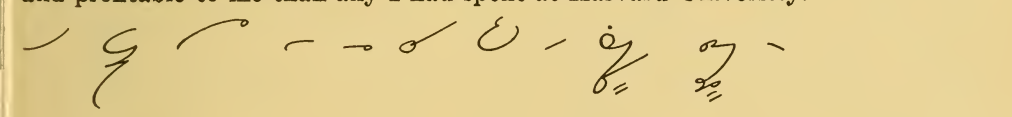
his circus bills, and everywhere he had been he had appropriated the treasures of

the old world. At two o'clock that morning, when I allowed this billposter to go

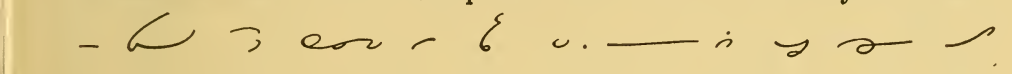


back to the steerage, I declared that that night had been far more entertaining

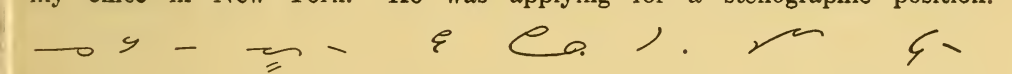
and profitable to me than any I had spent at Harvard University.



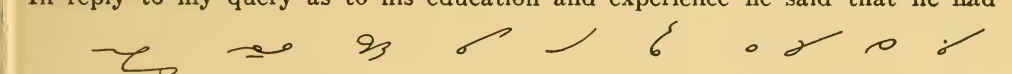
In bold contrast I recall the experience of a man who recently came into



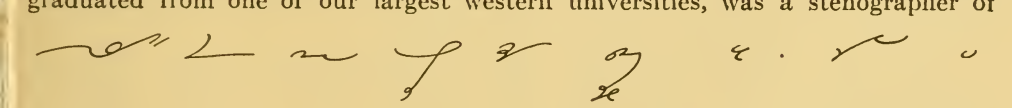
my office in New York. He was applying for a stenographic position.



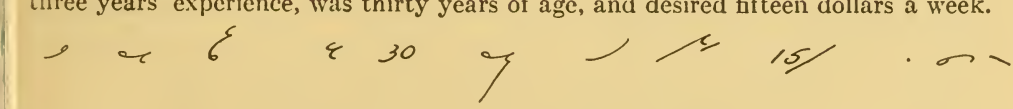
In reply to my query as to his education and experience he said that he had



graduated from one of our largest western universities, was a stenographer of



three years' experience, was thirty years of age, and desired fifteen dollars a week.



# Teacher's Key to Gregg Shorthand Test B-2

In scoring Test B-2 find the last word written by the pupil and refer to the following key to find the number of that word. Divide by two to find the score in words per minute; mark this score on the pupil's paper and tally the same on the Class Record Sheet.

## Eyes That See

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
On board the vessel that night I met the most wonderful man of all my
16 17 18 19 20 21 22 23 24 25 26 27 28 29
acquaintances. I cannot tell you his name for, indeed, I never knew him, and
30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45
yet I call him the most interesting man I have ever met. He was a steerage
46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
passenger and had come up from the bowels of the ship after midnight to get
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78
a few breaths of fresh air. I found that he was a billposter for one of our great
79 80 81 82 83 84 85 86 87 88 89 90 91
American circuses. He was not an educated man from the viewpoint of books,
92 93 94 95 96 97 98 99 100 101 102 103 104 105 106
but he was a post graduate in the university of observation. He told me all
107 108 109 110 111 112 113 114 115 116 117 118 119
about the wonderful institution—the circus. I thought I knew all about the
120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136
circus. Years ago I used to get up at four o'clock in the morning and watch the
137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153
circus until it left the next morning at four. I thought I knew all about it. I
154 155 156 157 158 159 160 161 162 163 164 165 166 167 168
knew all the animals by their first names, and was on intimate terms with the
169 170 171 172 173 174 175 176 177 178 179
gentleman who issued the complimentary tickets for services rendered. But I
180 181 182 183 184 185 186 187 188 189 190 191 192 193
found out on this night that I really knew nothing about the circus. When
194 195 196 197 198 199 200 201 202 203 204 205 206
this billposter told me the clock-like precision with which this great institution
207 208 209 210 211 212 213 214 215 216 217 218 219 220 221
moved from one city to another; when he told me how many beeves and potatoes
222 223 224 225 226 227 228 229 230 231 232 233 234 335 236
were required to feed all the people; the difference in pay between the men who
237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252
drove the tent stakes and those who did the acting, how I wished that every boy
253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268
and girl in this country might learn what I learned about a circus that night from
269 270 271 272 273 274 275 276 277 278 279 280 281 282
this steerage passenger. He had been all over Europe putting up his circus bills,
283 284 285 286 287 288 289 290 291 292 293 294 295 296
and everywhere he had been he had appropriated the treasures of the old world.
297 298 299 300 301 302 303 304 305 306 307 308 309 310 311
At two o'clock that morning, when I allowed this billposter to go back to the
312 313 314 315 316 317 318 319 320 321 322 323 324
steerage, I declared that that night had been far more entertaining and profitable
325 326 327 328 329 330 331 332 333 334
to me than any I had spent at Harvard University.
335 336 337 338 339 340 341 342 343 344 345 346 347 348
In bold contrast I recall the experience of a man who recently came into
349 350 351 352 353 354 355 356 357 358 359 360 361 362
my office in New York. He was applying for a stenographic position. In reply
363 364 365 366 367 368 369 370 371 372 373 374 375 376 377
to my query as to his education and experience he said that he had graduated
378 379 380 381 382 383 384 385 386 387 388 389 390
from one of our largest western universities, was a stenographer of three years'
391 392 393 394 395 396 397 398 399 400 401 402
experience, was thirty years of age, and desired fifteen dollars a week.

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# CLASS RECORD SHEET

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To be used with Series B Tests in Gregg Shorthand.

City.....State.....Date.....

School.....Teacher.....Grade.....

Test used was of the Series B, Number.....

This class has studied shorthand.....weeks

| Score | Tally | No. of Pupils |
|---|---|---|
| 191–200 | | |
| 181–190 | | |
| 171–180 | | |
| 161–170 | | |
| 151–160 | | |
| 141–150 | | |
| 131–140 | | |
| 121–130 | | |
| 111–120 | | |
| 101–110 | | |
| 91–100 | | |
| 81– 90 | | |
| 71– 80 | | |
| 61– 70 | | |
| 51– 60 | | |
| 41– 50 | | |
| 31– 40 | | |
| 21– 30 | | |
| 11– 20 | | |
| 0– 10 | | |

### General Directions

Tests of the Series B–1, B–2, are designed to measure not the quality of shorthand notes (for which a scale is being prepared), but the speed of writing shorthand when the correct outlines are given. These tests will not measure the pupil's knowledge of the system. Other tests will be prepared for that purpose.

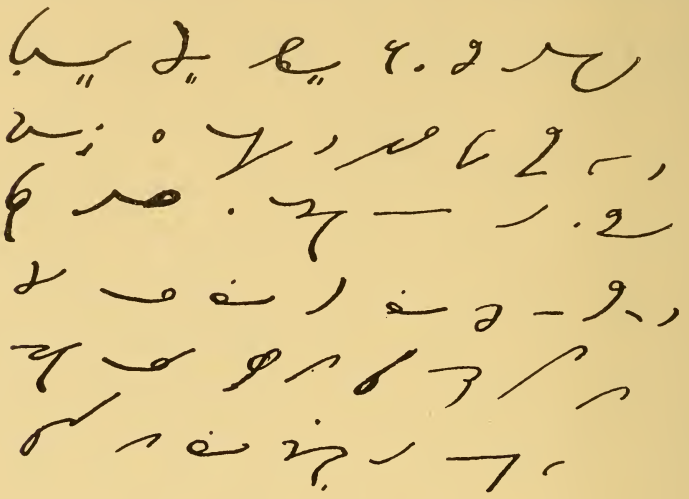
Directions for scoring are given with the Teacher's Key. Find the last word written by the pupil. Get the number of this word from the key. Divide by two to get the score in words per minute. Place this score on pupil's paper and a tally mark opposite the group within which the score falls. When all papers have been scored, these tallies should be counted and the total extended to the last column, under *No. of Pupils.*

Send one copy of this sheet to the Gregg Publishing Company, New York City.

# KEY TO THE TEXT OF THE 40 SPECIMENS OF SHORTHAND

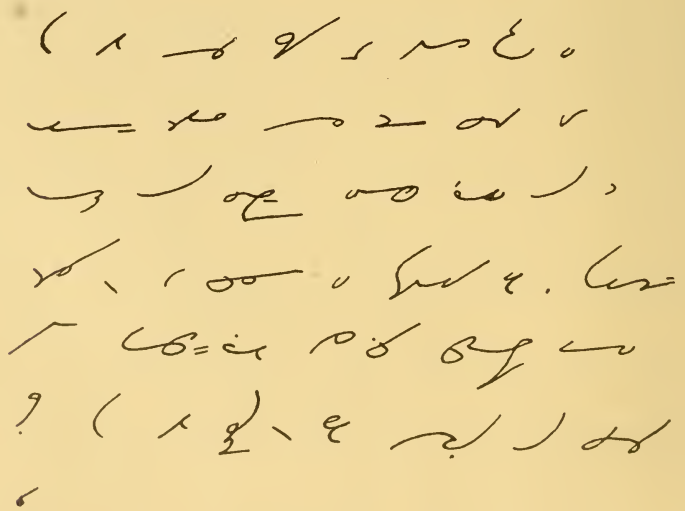
1.

Balt Van Tassel was an easy, indulgent soul. He loved his daughter better even than his pipe, and, like a reasonable man and an excellent father, let her have her way in everything. His notable little wife, too, had enough to do to attend to her housekeeping and manage the



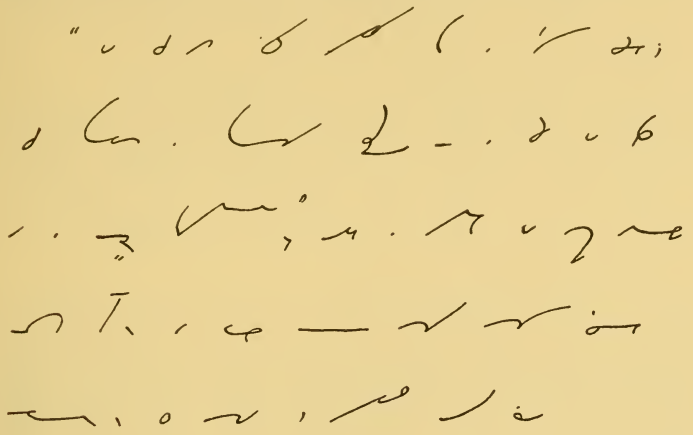
2.

But it is meet I should, in the true spirit of romantic story, give some account of the looks and equipments of my hero and his steed The animal he bestrode was a broken-down plow-horse, that had outlived almost everything but his viciousness. He was gaunt and shagged, with



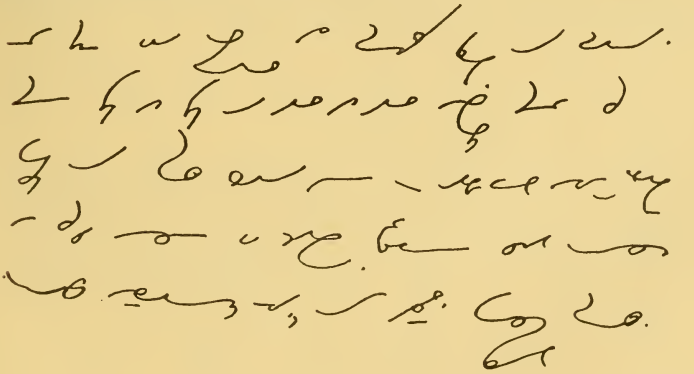
3.

Oh, she too had died but a short time since. She broke a blood-vessel in a fit of passion at a New England peddler. There was a drop of comfort, at least, in this intelligence. The honest man could contain himself no longer. He caught his daughter and her



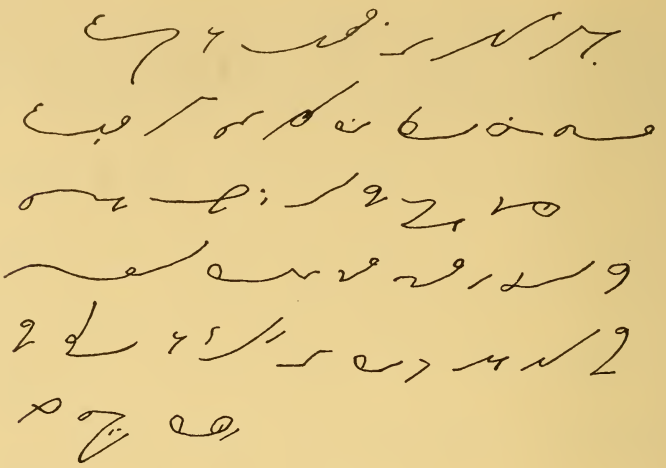
4.

In the fullness of their revelry, they fluttered, chirping and frolicking, from bush to bush, and tree to tree, capricious from the very profusion and variety around them. There was the honest cock-robin, the favorite game of stripling sportsmen, with its loud, querulous note; and the twittering blackbirds flying



5.

A sloop was loitering in the distance, dropping slowly down with the tide, her sail hanging uselessly against the mast; and, as the reflection of the sky gleamed along the still water, it seemed as if the vessel was suspended in the air. It was toward evening that Ichabod arrived



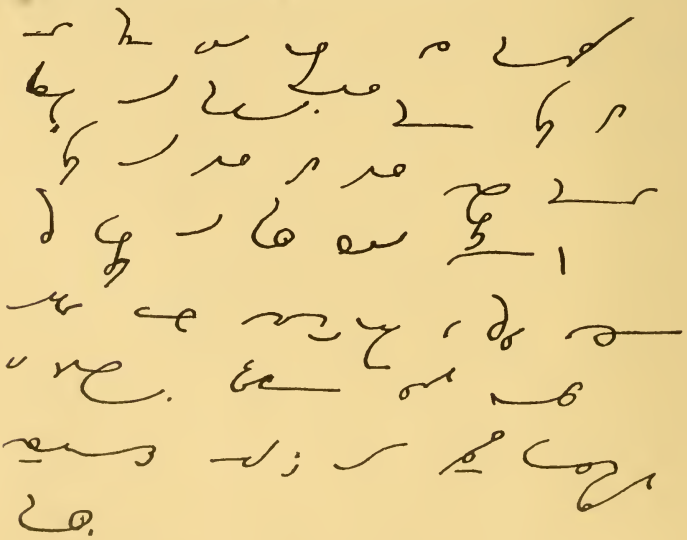
6.

How solemnly they would listen to the contents, as drawled out by Derrick Van Bummel, the schoolmaster,—a dapper, learned little man, who was not to be daunted by the most gigantic word in the dictionary; and how sagely they would deliberate upon public events some months after they had

(For this specimen see quality 30 on the scale.)

7.

In the fullness of their revelry, they fluttered, chirping and frolicking, from bush to bush, and tree to tree, capricious from the very profusion and variety around them. There was the honest cock-robin, the favorite game of stripling sportsmen, with its loud, querulous note; and the twittering blackbirds flying



8.

Just sufficient time had elapsed to enable each story-teller to dress up his tale with a little becoming fiction, and, in the indistinctness of his recollection, to make himself the hero of every exploit. There was the story of Doffue Martling, a large, blue-bearded Dutchman, who had nearly taken

(For this specimen see quality 35 on the scale.)

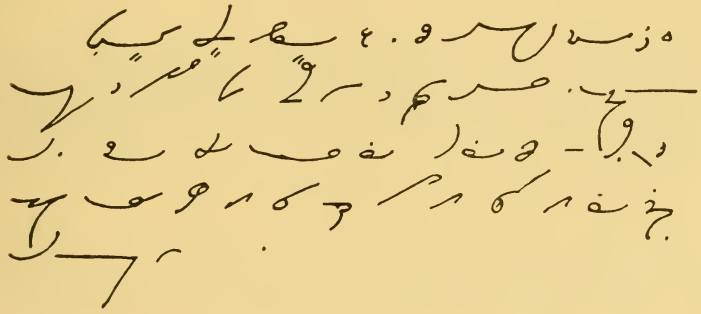
9.

Your mere puny stripling, that winced at the least flourish of the rod, was passed by with indulgence; but the claims of justice were satisfied by inflicting a double portion on some little, tough, wrong-headed, broad-skirted Dutch urchin, who sulked and swelled and grew dogged and sullen beneath

(For this specimen see quality 45 on the scale.)

10.

Balt Van Tassel was an easy, indulgent soul. He loved his daughter better even than his pipe, and, like a reasonable man and an excellent father, let her have her way in everything. His notable little wife, too, had enough to do to attend to her housekeeping and manage the



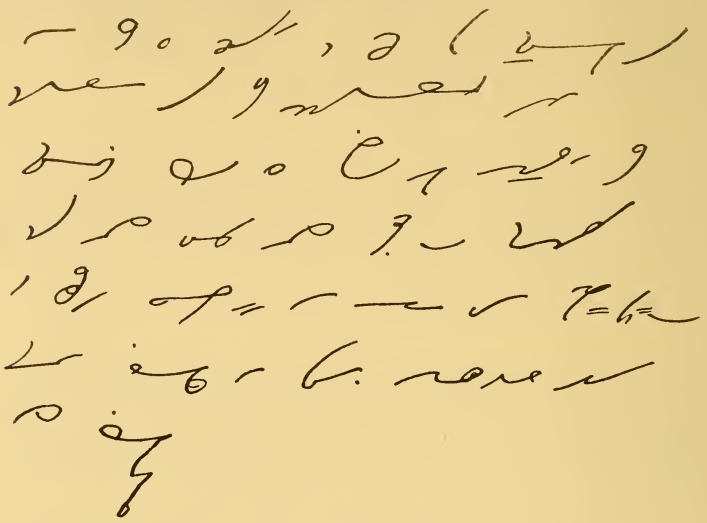
11.

But the thought and feeling embodied in the words of great writers during the so-called classic days of Greece and Rome are truly and splendidly alive today for the simple reason that they were alive then; and are so true to the universal experience of mankind and so beautiful in (50) their expression that Time cannot touch them nor age wither their "infinite variety,"

(For this specimen see quality 95 on the scale.)

12.

Then, as he wended his way, by swamp and stream and awful woodland, to the farmhouse where he happened to be quartered, every sound of nature, at that witching hour, fluttered his excited imagination, the moan of the whip-poor-will from the hillside; the boding cry of the tree-toad, that harbinger



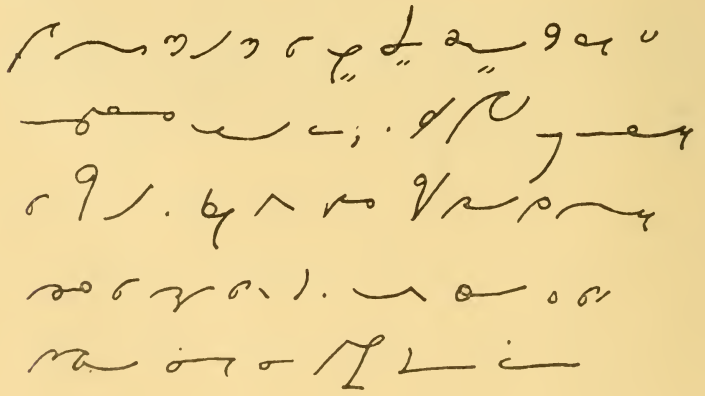
13.

Brom Bones, however, was the hero of the scene, having come to the gathering on his favorite steed Daredevil, a creature, like himself, full of mettle and mischief, and which no one but himself could manage. He was, in fact, noted for preferring vicious animals, given to all kinds of

(For this specimen see quality 60 on the scale.)

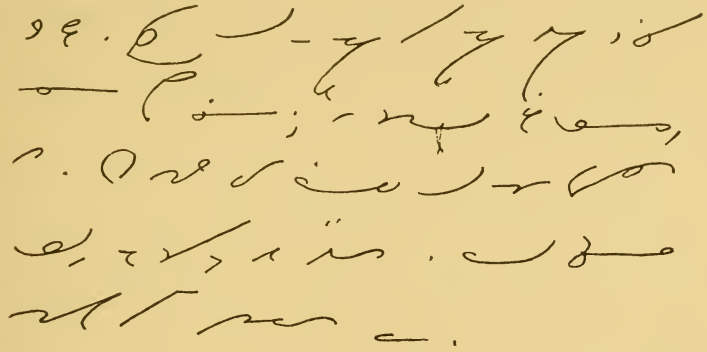
14.

Times grew worse and worse with Rip Van Winkle as years of matrimony rolled on. A tart temper never mellows with age, and a sharp tongue is the only edged tool that grows keener with constant use. For a long while he used to console himself, when driven from home



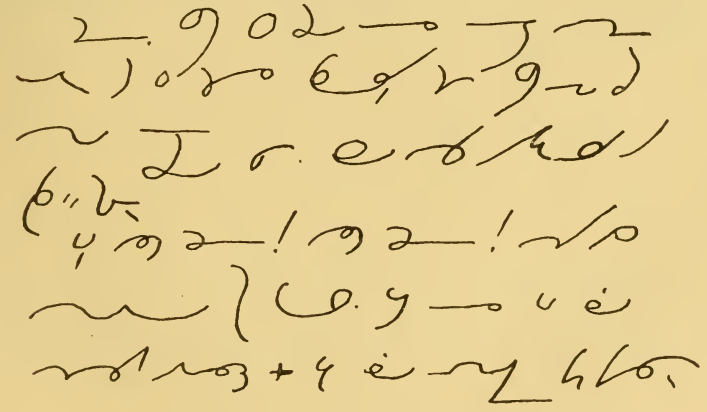
15.

As he was a bachelor, and in nobody's debt, nobody troubled his head any more about him. The school was removed to a different quarter of the hollow, and another pedagogue reigned in his stead. It is true, an old farmer, who had been down to New York on a



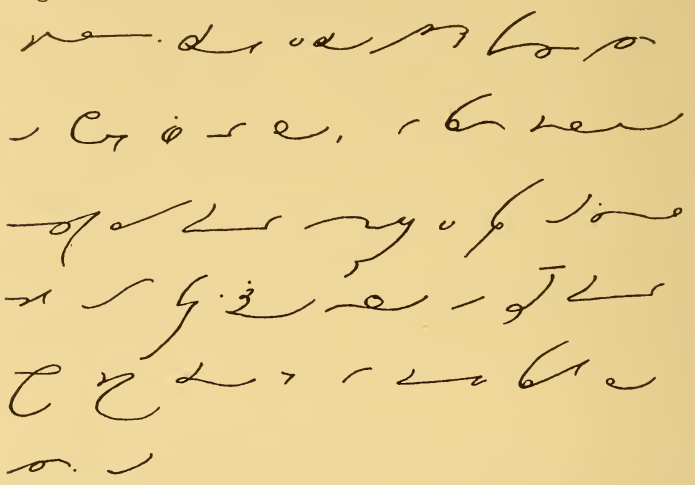
16.

Something, however, I fear me, must have gone wrong; for he certainly sallied forth, after no very great interval, with an air quite desolate and chopfallen. Oh these women, these women! Could that girl have been playing off any of her coquettish tricks? Was her encouragement of the poor pedagogue



17.

Streaming files of wild ducks began to make their appearance high in the air. The bark of the squirrel might be heard from the groves of beech and hickory nuts, and the pensive whistle of the quail at intervals from the neighboring stubble-field. The small birds were taking their



18.

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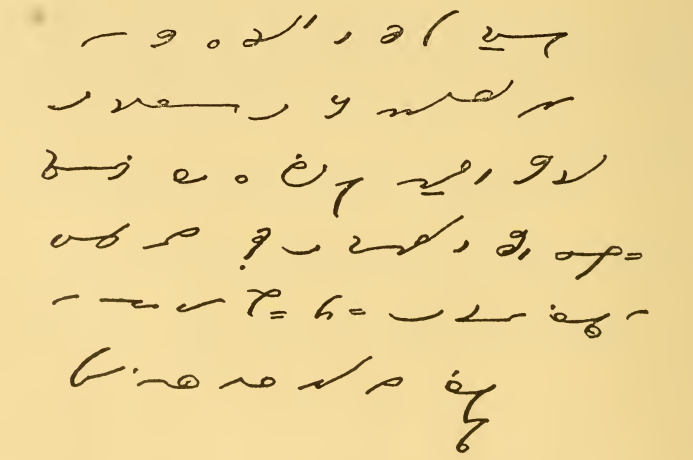
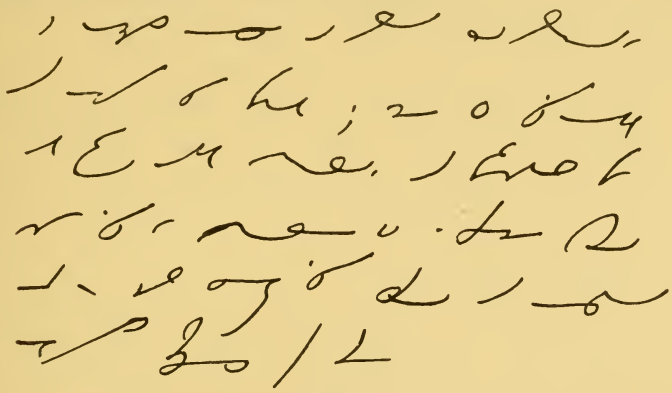


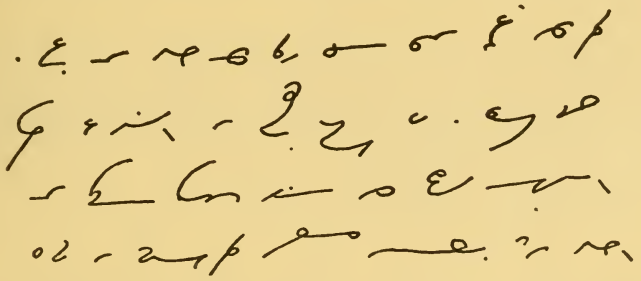
19.

His rusty mane and tail were tangled and knotted with burrs. One eye had lost its pupil, and was glaring and spectral, but the other had the gleam of a genuine devil in it. Still he must have had fire and mettle in his day, if we may judge from



20.

An opening in the trees now cheered him with the hopes that the church bridge was at hand. The wavering reflection of a silver star in the bosom of the brook told him that he was not mistaken. He saw the walls of the church dimly glaring under the trees



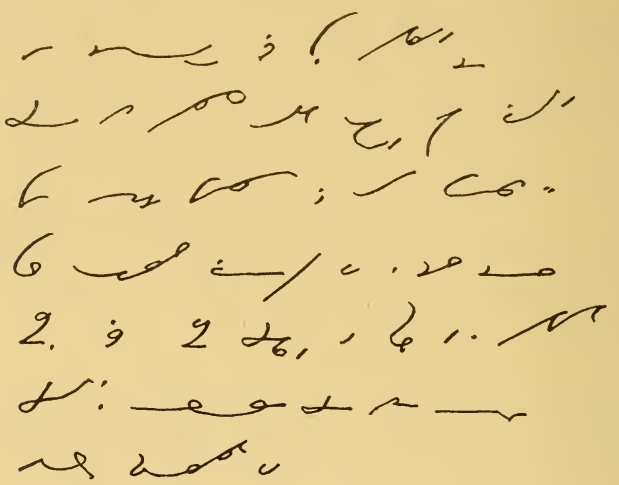
21.

This story was immediately matched by a thrice marvelous adventure of Brom Bones, who made light of the Galloping Hessian as an arrant jockey. He affirmed that, on returning one night from the neighboring village of Sing Sing, he had been overtaken by this midnight trooper; that he had offered

(For this specimen see quality O on the scale.)

22.

The schoolhouse, being deserted, soon fell to decay, and was reported to be haunted by the ghost of the unfortunate pedagogue; and the plow-boy, loitering homeward of a still summer evening, has often fancied his voice at a distance, chanting a melancholy psalm tune among the tranquil solitudes of



23.

There are three sorts of actions: those that are good, those that are bad, and those that are doubtful, and we ought to be cautious of those that are doubtful; for we are in most danger of these doubtful actions, because they do not alarm us, and yet they insensibly (50) lead to greater transgressions, just as the shades of twilight gradually reconcile us to darkness.

(For this specimen see quality 85 on the scale.)

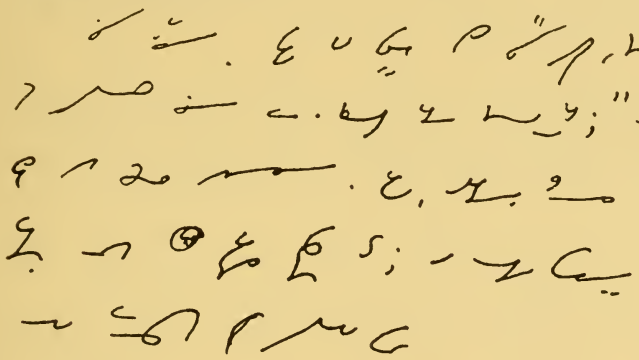
24.

The opinions of this junto were completely controlled by Nicholas Vedder, a patriarch of the village, and landlord of the inn, at the door of which he took his seat from morning till night, just moving sufficiently to avoid the sun, and keep in the shade of a large tree

(For this specimen see quality 80 on the scale.)

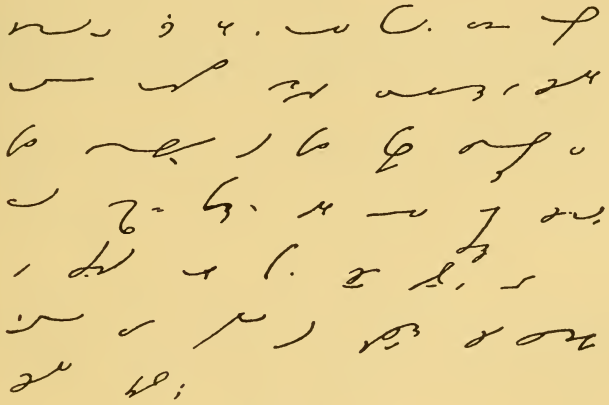
25.

He had overheard the boast of Bones, that he would "double the schoolmaster up and put him on a shelf;" and he was too wary to give him an opportunity. There was something extremely provoking in this obstinately pacific system; it left Brom no alternative but to draw upon the



26.

His schoolhouse was a low building of one large room, rudely constructed of logs; the windows partly glazed, and partly patched with leaves of old copy-books. It was most ingeniously secured at vacant hours by a withe twisted in the handle of the door, and stakes set against the window-shutters;



27.

As to Rip's son and heir, who was the ditto of himself, seen leaning against the tree, he was employed to work on the farm, but evinced an hereditary disposition to attend to anything else but his business. Rip now resumed his old walks and habits. He soon found many

(For this specimen see quality 75 on the scale.)

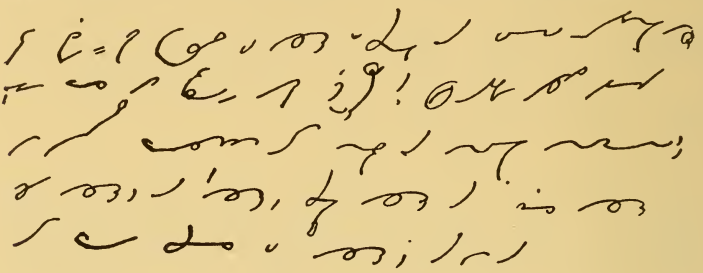
28.

The poor fellow was now completely confounded. He doubted his own identity, and whether he was himself or another man. In the midst of his bewilderment, the man in the cocked hat demanded who he was, and what was his name. "God knows!" exclaimed he, at his wits' end. "I'm

(For this specimen see quality 70 on the scale.)

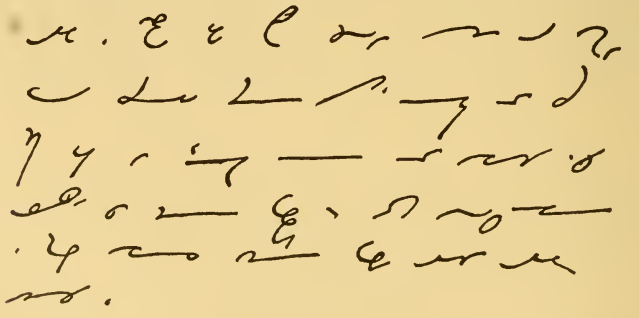
29.

Such heaped-up platters of cakes of various and almost indescribable kinds, known only to experienced Dutch housewives! There was the doughty doughnut, the tender oly-koek, and the crisp and crumbling cruller; sweet cakes and short cakes. ginger cakes and honey cakes, and the whole family of cakes; and then there



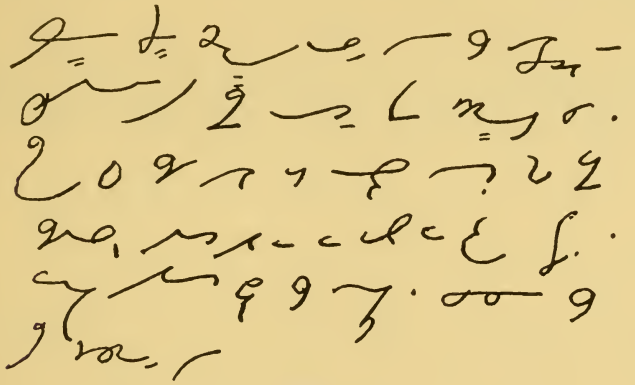
30.

There was a whisper, also, about securing the gun, and keeping the old fellow from doing mischief, at the very suggestion of which the self-important man in the cocked hat retired with some precipitation. At this critical moment a fresh, comely woman pressed through the throng to get a



31.

Dame Van Winkle regarded them as companions in idleness, and even looked upon Wolf with an evil eye, as the cause of his master's going so often astray. True it is, in all points of spirit befitting an honorable dog, he was as courageous an animal as ever scoured the



32.

Certain it is, the place still continues under the sway of some witching power, that holds a spell over the minds of the good people, causing them to walk in a continual revere. They are given to all kinds of marvelous beliefs; are subject to trances and visions; and frequently

(For this specimen see quality 90 on the scale.)

33.

They are like those little nooks of still water which border a rapid stream, where we may see the straw and bubble riding quietly at anchor, or slowly revolving in their mimic harbor, undisturbed by the rush of the passing current. Though many years have elapsed since I trod the

(For this specimen see quality 50 on the scale.)

34.

Fain would I pause to dwell upon the world of charms that burst upon the enraptured gaze of my hero, as he entered the state parlor of Van Tassel's mansion; not those of the bevy of buxom lasses, with their luxurious display of red and white, but the ample charms

(For this specimen see quality 55 on the scale.)

35.

He assisted the farmers occasionally in the lighter labors of their farms, helped to make hay, mended the fences, took the horses to water, drove the cows from pasture, and cut wood for the winter fire. He laid aside, too, all the dominant dignity and absolute sway with which he

(For this specimen see quality 25 on the scale.)

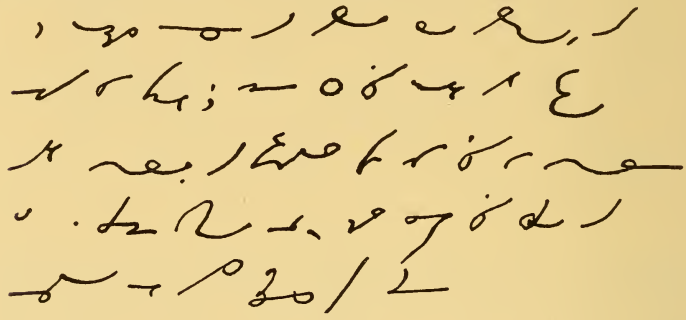
36.

The gallant Ichabod now spent at least an extra half hour at his toilet, brushing and furbishing up his best and indeed only suit of rusty black, and arranging his looks by a bit of broken looking-glass that hung up in the schoolhouse. That he might make his appearance

(For this specimen see quality 40 on the scale.)

37.

His rusty mane and tail were tangled and knotted with burrs. One eye had lost its pupil, and was glaring and spectral, but the other had the gleam of a genuine devil in it. Still he must have had fire and mettle in his day, if we may judge from



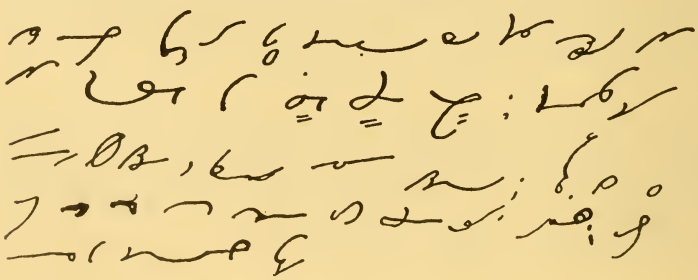
38.

"I am your father!" cried he,—"young Rip Van Winkle once, old Rip Van Winkle now! Does anybody know poor Rip Van Winkle?" All stood amazed, until an old woman, tottering out from among the crowd, put her hand to her brow, and, peering under it in his face for a

(For this specimen see quality 65 on the scale.)

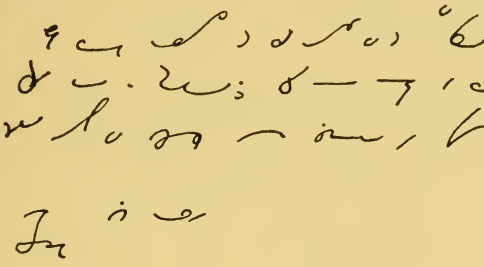
39.

These magic books and the poetic scrawl were forthwith consigned to the flames by Hans Van Ripper, who from that time forward determined to send his children no more to school, observing that he never knew any good come of this same reading and writing. Whatever money the schoolmaster possessed



40.

He was always ready for either a fight or a frolic; had more mischief than ill will in his composition; and, with all his overbearing roughness, there was a strong dash of waggish good-humor at bottom. He had three or four boon companions of his own stamp, who regarded



# CLASS RECORD SHEET

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To be used with the MEASURING SCALE FOR SHORTHAND PENMANSHIP

City..... State..... Date.....

School..... Teacher..... Grade.....

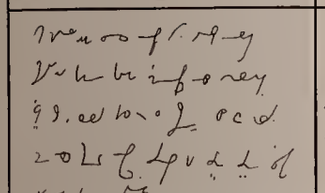
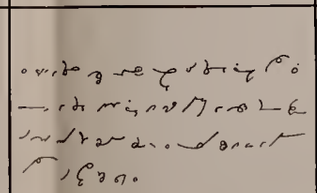
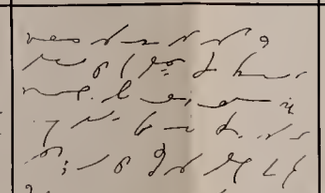
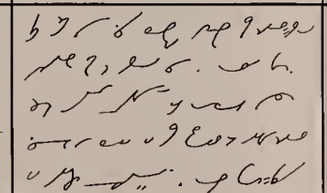
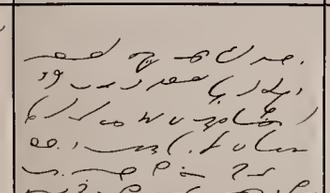
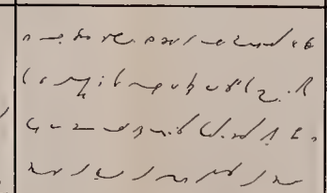
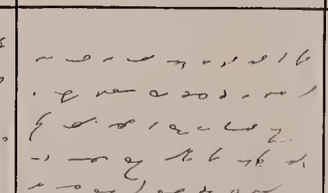
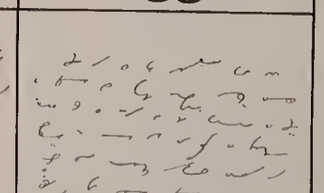
See other side for directions.

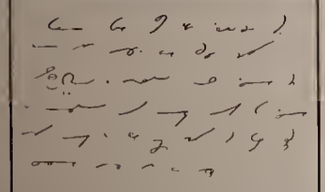
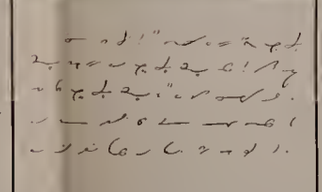
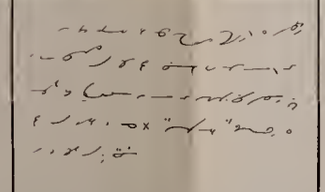
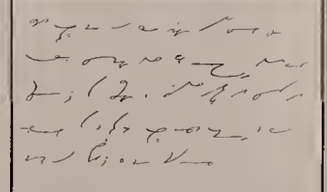
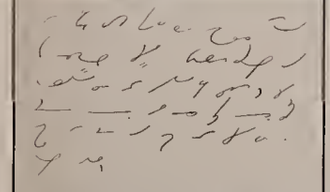
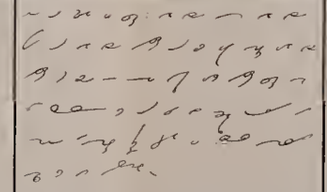
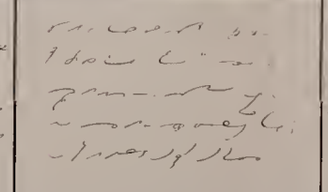
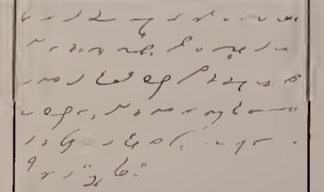
This class has studied shorthand ..... weeks.

| Score for Quality | Score for speed in words per minute | | | | | | | | | | | | | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0–10 | 11–20 | 21–30 | 31–40 | 41–50 | 51–60 | 61–70 | 71–80 | 81–90 | 91–100 | 101–110 | 111–120 | 121–130 | 131–140 | 141–150 | over 150 | |
| 95 | | | | | | | | | | | | | | | | | |
| 90 | | | | | | | | | | | | | | | | | |
| 85 | | | | | | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | | | | | | |
| 70 | | | | | | | | | | | | | | | | | |
| 65 | | | | | | | | | | | | | | | | | |
| 60 | | | | | | | | | | | | | | | | | |
| 55 | | | | | | | | | | | | | | | | | |
| 50 | | | | | | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| under 25 | | | | | | | | | | | | | | | | | |
| Totals | | | | | | | | | | | | | | | | | |

Send one copy of this sheet to The Gregg Publishing Company, New York City

# MEASURING SCALE FOR GREGG SHORTHAND PENMANSHIP

| (0) 0 | (3.05) 25 | (3.61) 30 | (4.26) 35 | (5.00) 40 | (5.65) 45 | (6.10) 50 | (6.91) 55 |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

| (7.28) 60 | (7.89) 65 | (8.31) 70 | (8.93) 75 | (9.59) 80 | (10.17) 85 | (10.51) 90 | (11.41) 95 |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |

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To measure the quality of a sample of shorthand slide it along the scale until a specimen of corresponding quality is found. The number above it represents the value of the sample of shorthand penmanship being measured.

## DIRECTIONS

Write the following sentence on the blackboard *in shorthand:*

"Fourscore[1] and[2] seven[3] years[4] ago[5] our[6] fathers[7] brought[8] forth[9] upon[10] this[11] continent[12] a[13] new[14] nation,[15] conceived[16] in[17] liberty,[18] and[19] dedicated[20] to[21] the[22] proposition[23] that[24] all[25] men[26] are[27] created[28] equal."[29]

Have the pupils write this three times for practice, to familiarize them with the text and the shorthand. Collect these papers.

See to it that all have paper and two pencils (or fountain pen). Then say: "DO NOT WRITE ANYTHING UNTIL I GIVE YOU THE SIGNAL TO START. YOU WILL HAVE THREE MINUTES IN WHICH TO WRITE THE SENTENCE AS OFTEN AS YOU CAN. BE CAREFUL TO WRITE AS WELL AS YOU CAN. YOU WILL BE RATED BOTH FOR SPEED AND FOR QUALITY. START AND STOP PROMPTLY WHEN THE SIGNALS ARE GIVEN. ALL READY. START!" Keep the time very carefully, using a watch with a second-hand, allowing *exactly* three minutes. "STOP!" Collect the papers.

The score for speed is ascertained by multiplying 29 by the number of times the sentence has been completely written, adding the number of the last word written. This is the total number of words written and should be divided by three to get the score for speed in words per minute. Write this score in the upper right-hand corner of the paper.

When all have been scored in this way, score the papers for quality by the use of the scale, writing this score under the score for speed.

Enter the scores on the class record sheet by making a tally-mark in the square under the proper score for speed and opposite the score for quality. Total these scores both ways.

Pupil's Score
Total 150
Wrong
Right

# A SERIES OF TESTS IN GREGG SHORTHAND

Arranged By Elmer Hoke, A. M.

## TEST C-1 *Vocabulary*

Published by
THE GREGG PUBLISHING COMPANY
New York Chicago Boston San Francisco London

Name.....Age.....
Years Months

Race.....Sex.....Grade.....

City.....State.....Date.....

School.....Teacher.....

How long have you studied Gregg Shorthand?.....Months

### Directions for Giving Test

1. Distribute papers face up on the desks. Ask pupils not to open papers until the signal is given.

2. Have pupils fill in blanks on the cover page.

3. Then say: "On the inside of this folder are 100 common words and 50 common phrases, with a space opposite each. You are to write in these spaces the shorthand outlines for the accompanying words and phrases. Accuracy is as important as speed. Work as fast as you can do it correctly. When I say, 'Ready, Start,' you may begin work. You will be given enough time to finish the work."

4. Give the signal to begin work and collect the papers as they are finished.

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Note.—The first pages of the other nine tests of the C series are identical with this, and will therefore not be given. Tests C-2 to C-10 follow immediately after this test, C-1.

| | |
|---|---|
| 1. me | |
| 2. can | |
| 3. bed | |
| 4. not | |
| 5. be | |
| 6. today | |
| 7. had | |
| 8. live | |
| 9. hat | |
| 10. belong | |
| 11. ball | |
| 12. love | |
| 13. some | |
| 14. for | |
| 15. ride | |
| 16. spring | |
| 17. nice | |
| 18. soon | |
| 19. take | |
| 20. dear | |
| 21. seven | |
| 22. inside | |
| 23. boat | |
| 24. gold | |
| 25. pay | |

| | |
|---|---|
| 26. place | |
| 27. every | |
| 28. wind | |
| 29. glad | |
| 30. glass | |
| 31. only | |
| 32. Friday | |
| 33. reach | |
| 34. try | |
| 35. clean | |
| 36. these | |
| 37. cent | |
| 38. began | |
| 39. stop | |
| 40. turn | |
| 41. date | |
| 42. world | |
| 43. once | |
| 44. nothing | |
| 45. order | |
| 46. beside | |
| 47. born | |
| 48. enter | |
| 49. speak | |
| 50. off | |

| | |
|---|---|
| 51. understand | |
| 52. office | |
| 53. money | |
| 54. offer | |
| 55. wonder | |
| 56. write | |
| 57. broke | |
| 58. April | |
| 59. January | |
| 60. doctor | |
| 61. fifth | |
| 62. retire | |
| 63. proper | |
| 64. personal | |
| 65. company | |
| 66. board | |
| 67. until | |
| 68. getting | |
| 69. beautiful | |
| 70. fortune | |
| 71. department | |
| 72. clerk | |
| 73. destroy | |
| 74. desire | |
| 75. employ | |

| | |
|---|---|
| 76. crowd | |
| 77. measure | |
| 78. running | |
| 79. information | |
| 80. enclose | |
| 81. statement | |
| 82. neighbor | |
| 83. drown | |
| 84. illustrate | |
| 85. common | |
| 86. effect | |
| 87. Christmas | |
| 88. arrive | |
| 89. marriage | |
| 90. piece | |
| 91. volume | |
| 92. concern | |
| 93. refer | |
| 94. earliest | |
| 95. expense | |
| 96. material | |
| 97. citizen | |
| 98. session | |
| 99. extreme | |
| 100. preliminary | |

| | |
|---|---|
| 101. of the | |
| 102. yours very truly | |
| 103. I have | |
| 104. there is | |
| 105. of our | |
| 106. there are | |
| 107. and company | |
| 108. to give | |
| 109. five thousand | |
| 110. to get | |
| 111. at least | |
| 112. we shall be | |
| 113. of them | |
| 114. they were | |
| 115. we would | |
| 116. I think | |
| 117. I know | |
| 118. to send | |
| 119. under the | |
| 120. some of the | |
| 121. that are | |
| 122. to meet | |
| 123. that you | |
| 124. to place | |
| 125. of that | |

| | |
|---|---|
| 126. to find | |
| 127. to my | |
| 128. we had | |
| 129. to his | |
| 130. have you | |
| 131. we have not | |
| 132. no doubt | |
| 133. have the | |
| 134. which was | |
| 135. he does | |
| 136. with regard to | |
| 137. on it | |
| 138. of this kind | |
| 139. in making | |
| 140. along the | |
| 141. two or three | |
| 142. in which the | |
| 143. you do not | |
| 144. my dear sir | |
| 145. we are not | |
| 146. give us | |
| 147. we shall take pleasure | |
| 148. dear doctor | |
| 149. might be | |
| 150. to put | |

## TEST C-2

| | | | |
|---|---|---|---|
| 1. do | | 26. report | |
| 2. see | | 27. under | |
| 3. top | | 28. print | |
| 4. us | | 29. with | |
| 5. but | | 30. party | |
| 6. look | | 31. where | |
| 7. over | | 32. hour | |
| 8. kill | | 33. better | |
| 9. child | | 34. move | |
| 10. door | | 35. spell | |
| 11. law | | 36. club | |
| 12. then | | 37. night | |
| 13. if | | 38. able | |
| 14. ran | | 39. walk | |
| 15. tree | | 40. lesson | |
| 16. river | | 41. road | |
| 17. end | | 42. country | |
| 18. came | | 43. own | |
| 19. Mr. | | 44. ground | |
| 20. west | | 45. third | |
| 21. forget | | 46. teach | |
| 22. blue | | 47. goes | |
| 23. rest | | 48. railroad | |
| 24. read | | 49. past | |
| 25. large | | 50. true | |

| | |
|---|---|
| 51. follow | |
| 52. great | |
| 53. ready | |
| 54. suffer | |
| 55. tire | |
| 56. expect | |
| 57. feel | |
| 58. history | |
| 59. mean | |
| 60. hear | |
| 61. eight | |
| 62. refuse | |
| 63. judge | |
| 64. everything | |
| 65. quite | |
| 66. September | |
| 67. madam | |
| 68. don't | |
| 69. flight | |
| 70. empire | |
| 71. obtain | |
| 72. though | |
| 73. newspaper | |
| 74. nearly | |
| 75. property | |

| | |
|---|---|
| 76. factory | |
| 77. famous | |
| 78. allow | |
| 79. whom | |
| 80. await | |
| 81. perhaps | |
| 82. weigh | |
| 83. adopt | |
| 84. different | |
| 85. diamond | |
| 86. distribute | |
| 87. interest | |
| 88. supply | |
| 89. further | |
| 90. certain | |
| 91. organize | |
| 92. associate | |
| 93. minute | |
| 94. whether | |
| 95. responsible | |
| 96. suggest | |
| 97. necessary | |
| 98. secretary | |
| 99. practical | |
| 100. disappoint | |

| | |
|---|---|
| 101. in the | |
| 102. that the | |
| 103. from the | |
| 104. of his | |
| 105. have been | |
| 106. you are | |
| 107. in which | |
| 108. one of the | |
| 109. you know | |
| 110. to me | |
| 111. you would | |
| 112. if you are | |
| 113. very much | |
| 114. to go | |
| 115. through the | |
| 116. we enclose | |
| 117. in order | |
| 118. and in | |
| 119. we do not | |
| 120. that will | |
| 121. who are | |
| 122. you will be | |
| 123. to him | |
| 124. to receive | |
| 125. thank you for | |

| | |
|---|---|
| 126. to have you | |
| 127. to them | |
| 128. we should like | |
| 129. to serve | |
| 130. he could | |
| 131. who had | |
| 132. on account of | |
| 133. he did | |
| 134. why not | |
| 135. he should | |
| 136. would not | |
| 137. should have | |
| 138. sometime ago | |
| 139. it would be | |
| 140. as it is | |
| 141. when they | |
| 142. they will | |
| 143. your account | |
| 144. please let | |
| 145. we beg | |
| 146. in this country | |
| 147. we should be glad | |
| 148. every day | |
| 149. more or less | |
| 150. up the | |

## TEST C-3

| | | | |
|---|---|---|---|
| 1. and | | 26. never | |
| 2. run | | 27. most | |
| 3. he | | 28. air | |
| 4. am | | 29. mine | |
| 5. this | | 30. upon | |
| 6. did | | 31. week | |
| 7. must | | 32. wife | |
| 8. late | | 33. water | |
| 9. ice | | 34. delay | |
| 10. yes | | 35. poor | |
| 11. ask | | 36. seen | |
| 12. house | | 37. pass | |
| 13. how | | 38. gone | |
| 14. was | | 39. grant | |
| 15. sick | | 40. half | |
| 16. plant | | 41. March | |
| 17. fall | | 42. meet | |
| 18. Sunday | | 43. before | |
| 19. after | | 44. lead | |
| 20. sold | | 45. push | |
| 21. happy | | 46. happen | |
| 22. post | | 47. hold | |
| 23. east | | 48. unable | |
| 24. fine | | 49. might | |
| 25. near | | 50. took | |

| | |
|---|---|
| 51. charge | |
| 52. Miss | |
| 53. omit | |
| 54. built | |
| 55. pair | |
| 56. need | |
| 57. sure | |
| 58. cause | |
| 59. vote | |
| 60. size | |
| 61. afraid | |
| 62. district | |
| 63. weather | |
| 64. rate | |
| 65. none | |
| 66. station | |
| 67. truly | |
| 68. Thursday | |
| 69. travel | |
| 70. mayor | |
| 71. family | |
| 72. o'clock | |
| 73. daughter | |
| 74. sometimes | |
| 75. select | |

| | |
|---|---|
| 76. publish | |
| 77. serve | |
| 78. position | |
| 79. arrest | |
| 80. suppose | |
| 81. their | |
| 82. wear | |
| 83. secure | |
| 84. object | |
| 85. together | |
| 86. general | |
| 87. often | |
| 88. assist | |
| 89. serious | |
| 90. witness | |
| 91. summon | |
| 92. automobile | |
| 93. ought | |
| 94. distinguish | |
| 95. beginning | |
| 96. mere | |
| 97. divide | |
| 98. association | |
| 99. proceed | |
| 100. especially | |

| | |
|---|---|
| 101. to the | |
| 102. to you | |
| 103. of this | |
| 104. if you | |
| 105. in this | |
| 106. must be | |
| 107. with your | |
| 108. we will | |
| 109. to see | |
| 110. to say | |
| 111. to this | |
| 112. to know | |
| 113. when the | |
| 114. did not | |
| 115. dear madam | |
| 116. and have | |
| 117. I should | |
| 118. as to the | |
| 119. we must | |
| 120. we remain | |
| 121. will not | |
| 122. and is | |
| 123. to that | |
| 124. we have been | |
| 125. would have | |

| | |
|---|---|
| 126. was the | |
| 127. we could | |
| 128. are you | |
| 129. to work | |
| 130. I don't | |
| 131. by you | |
| 132. so much | |
| 133. I believe | |
| 134. with our | |
| 135. in connection with | |
| 136. any one | |
| 137. to learn | |
| 138. this morning | |
| 139. let me | |
| 140. by which | |
| 141. yes sir | |
| 142. to speak | |
| 143. will have | |
| 144. railroad company | |
| 145. we have the | |
| 146. is in | |
| 147. we think | |
| 148. for him | |
| 149. my dear Mr. | |
| 150. upon his | |

## TEST C-4

| | |
|---|---|
| 1. go | |
| 2. the | |
| 3. you | |
| 4. good | |
| 5. all | |
| 6. like | |
| 7. make | |
| 8. let | |
| 9. play | |
| 10. low | |
| 11. just | |
| 12. year | |
| 13. her | |
| 14. that | |
| 15. got | |
| 16. cut | |
| 17. feet | |
| 18. show | |
| 19. thing | |
| 20. told | |
| 21. noon | |
| 22. town | |
| 23. son | |
| 24. cannot | |
| 25. down | |

| | |
|---|---|
| 26. found | |
| 27. made | |
| 28. fill | |
| 29. became | |
| 30. two | |
| 31. first | |
| 32. state | |
| 33. round | |
| 34. pound | |
| 35. finish | |
| 36. felt | |
| 37. shut | |
| 38. suit | |
| 39. soap | |
| 40. father | |
| 41. next | |
| 42. another | |
| 43. know | |
| 44. such | |
| 45. point | |
| 46. begun | |
| 47. drill | |
| 48. ticket | |
| 49. begin | |
| 50. again | |

| | |
|---|---|
| 51. says | |
| 52. who | |
| 53. anyway | |
| 54. center | |
| 55. check | |
| 56. thus | |
| 57. least | |
| 58. study | |
| 59. court | |
| 60. December | |
| 61. uncle | |
| 62. restrain | |
| 63. worth | |
| 64. chief | |
| 65. knew | |
| 66. attend | |
| 67. whole | |
| 68. spend | |
| 69. rapid | |
| 70. wait | |
| 71. favor | |
| 72. support | |
| 73. answer | |
| 74. declare | |
| 75. connection | |

| | |
|---|---|
| 76. represent | |
| 77. estate | |
| 78. field | |
| 79. themselves | |
| 80. wonderful | |
| 81. imprison | |
| 82. entertain | |
| 83. honor | |
| 84. provision | |
| 85. convention | |
| 86. tomorrow | |
| 87. stopped | |
| 88. difference | |
| 89. doubt | |
| 90. investigate | |
| 91. official | |
| 92. various | |
| 93. absence | |
| 94. consideration | |
| 95. application | |
| 96. senate | |
| 97. principal | |
| 98. career | |
| 99. cordially | |
| 100. annual | |

| | |
|---|---|
| 101. it is | |
| 102. with the | |
| 103. five per cent | |
| 104. for you | |
| 105. into the | |
| 106. should be | |
| 107. if the | |
| 108. it will | |
| 109. from you | |
| 110. to take | |
| 111. had been | |
| 112. do not | |
| 113. with us | |
| 114. to keep | |
| 115. for us | |
| 116. and was | |
| 117. at our | |
| 118. we may | |
| 119. we shall be glad | |
| 120. we want | |
| 121. about it | |
| 122. at last | |
| 123. we wish | |
| 124. we regret | |
| 125. and it is | |

| | |
|---|---|
| 126. we are in | |
| 127. who is | |
| 128. by this | |
| 129. we desire | |
| 130. if it | |
| 131. five hundred thousand dollars | |
| 132. that it | |
| 133. if not | |
| 134. your favor | |
| 135. in this way | |
| 136. at the time | |
| 137. to send you | |
| 138. to become | |
| 139. of what | |
| 140. can you | |
| 141. you could | |
| 142. to those | |
| 143. and not | |
| 144. so far as | |
| 145. we sent you | |
| 146. is it | |
| 147. we trust that | |
| 148. from which | |
| 149. shall have | |
| 150. we receive | |

## TEST C-5

| | |
|---|---|
| 1. at | |
| 2. in | |
| 3. will | |
| 4. little | |
| 5. your | |
| 6. six | |
| 7. school | |
| 8. big | |
| 9. sea | |
| 10. soft | |
| 11. way | |
| 12. to | |
| 13. them | |
| 14. his | |
| 15. north | |
| 16. song | |
| 17. went | |
| 18. Monday | |
| 19. what | |
| 20. best | |
| 21. think | |
| 22. stay | |
| 23. help | |
| 24. May | |
| 25. why | |

| | |
|---|---|
| 26. side | |
| 27. said | |
| 28. along | |
| 29. brother | |
| 30. they | |
| 31. sent | |
| 32. July | |
| 33. cost | |
| 34. behind | |
| 35. hurt | |
| 36. full | |
| 37. easy | |
| 38. track | |
| 39. news | |
| 40. anything | |
| 41. indeed | |
| 42. trip | |
| 43. were | |
| 44. many | |
| 45. within | |
| 46. collect | |
| 47. army | |
| 48. account | |
| 49. contract | |
| 50. inform | |

| | |
|---|---|
| 51. member | |
| 52. died | |
| 53. front | |
| 54. prove | |
| 55. woman | |
| 56. sorry | |
| 57. himself | |
| 58. copy | |
| 59. dozen | |
| 60. rather | |
| 61. royal | |
| 62. contain | |
| 63. perfect | |
| 64. remain | |
| 65. between | |
| 66. address | |
| 67. enjoy | |
| 68. repair | |
| 69. beg | |
| 70. Mrs. | |
| 71. does | |
| 72. reply | |
| 73. engage | |
| 74. firm | |
| 75. except | |

| | |
|---|---|
| 76. term | |
| 77. remember | |
| 78. ledge | |
| 79. special | |
| 80. direction | |
| 81. written | |
| 82. salary | |
| 83. promise | |
| 84. according | |
| 85. increase | |
| 86. consider | |
| 87. motion | |
| 88. examination | |
| 89. condition | |
| 90. therefore | |
| 91. victim | |
| 92. decide | |
| 93. conference | |
| 94. colonies | |
| 95. difficulty | |
| 96. receive | |
| 97. testimony | |
| 98. height | |
| 99. character | |
| 100. committee | |

| | |
|---|---|
| 101. and the | |
| 102. by the | |
| 103. it was | |
| 104. we shall | |
| 105. would be | |
| 106. in our | |
| 107. about the | |
| 108. five cents | |
| 109. your letter | |
| 110. does not | |
| 111. as well as | |
| 112. to pay | |
| 113. at all | |
| 114. which will | |
| 115. over the | |
| 116. as soon as | |
| 117. at this | |
| 118. yours respectfully | |
| 119. it will be | |
| 120. dear Mr. | |
| 121. among the | |
| 122. in it | |
| 123. he would | |
| 124. we take | |
| 125. and sons | |

| | |
|---|---|
| 126. we are sending you | |
| 127. at any time | |
| 128. for that | |
| 129. you desire | |
| 130. if they | |
| 131. hear from you | |
| 132. this matter | |
| 133. in all | |
| 134. you want | |
| 135. I shall be | |
| 136. call your attention | |
| 137. to tell | |
| 138. which are | |
| 139. on that | |
| 140. for some time | |
| 141. you're | |
| 142. trusting that | |
| 143. at first | |
| 144. there will be | |
| 145. we should be pleased | |
| 146. kindly let us | |
| 147. will you please | |
| 148. I don't know | |
| 149. should not be | |
| 150. with that | |

## TEST C-6

| | | | |
|---|---|---|---|
| 1. on | | 26. kind | |
| 2. so | | 27. work | |
| 3. we | | 28. lost | |
| 4. ago | | 29. rain | |
| 5. out | | 30. would | |
| 6. boy | | 31. mile | |
| 7. street | | 32. head | |
| 8. mother | | 33. price | |
| 9. day | | 34. around | |
| 10. stand | | 35. maybe | |
| 11. get | | 36. fail | |
| 12. I | | 37. catch | |
| 13. other | | 38. watch | |
| 14. led | | 39. small | |
| 15. white | | 40. table | |
| 16. winter | | 41. four | |
| 17. back | | 42. list | |
| 18. yet | | 43. dead | |
| 19. than | | 44. morning | |
| 20. form | | 45. done | |
| 21. sister | | 46. file | |
| 22. grand | | 47. pretty | |
| 23. hard | | 48. driven | |
| 24. line | | 49. deal | |
| 25. bill | | 50. both | |

| | |
|---|---|
| 51. case | |
| 52. change | |
| 53. aunt | |
| 54. rule | |
| 55. heard | |
| 56. young | |
| 57. press | |
| 58. matter | |
| 59. act | |
| 60. there | |
| 61. comfort | |
| 62. objection | |
| 63. figure | |
| 64. second | |
| 65. direct | |
| 66. public | |
| 67. request | |
| 68. awful | |
| 69. trouble | |
| 70. degree | |
| 71. husband | |
| 72. regard | |
| 73. oblige | |
| 74. final | |
| 75. region | |

| | |
|---|---|
| 76. section | |
| 77. either | |
| 78. claim | |
| 79. women | |
| 80. forward | |
| 81. arrange | |
| 82. visitor | |
| 83. wreck | |
| 84. already | |
| 85. manner | |
| 86. against | |
| 87. theater | |
| 88. particular | |
| 89. government | |
| 90. too | |
| 91. estimate | |
| 92. entitle | |
| 93. Wednesday | |
| 94. assure | |
| 95. scene | |
| 96. respectfully | |
| 97. discussion | |
| 98. organization | |
| 99. separate | |
| 100. decision | |

| | |
|---|---|
| 101. dear sir | |
| 102. five dollars | |
| 103. very truly yours | |
| 104. in your | |
| 105. can be | |
| 106. of course | |
| 107. to our | |
| 108. of it | |
| 109. but the | |
| 110. if you will | |
| 111. upon the | |
| 112. we hope | |
| 113. I shall | |
| 114. who have | |
| 115. we shall be pleased | |
| 116. in regard to | |
| 117. if you can | |
| 118. before the | |
| 119. on this | |
| 120. for which | |
| 121. could be | |
| 122. it is not | |
| 123. is that | |
| 124. what is | |
| 125. give you | |

| | |
|---|---|
| 126. we trust | |
| 127. I'll | |
| 128. he can | |
| 129. and their | |
| 130. in fact | |
| 131. if there | |
| 132. to secure | |
| 133. I should like | |
| 134. and make | |
| 135. it has been | |
| 136. I could | |
| 137. to which | |
| 138. with this | |
| 139. ought to | |
| 140. if we | |
| 141. yours sincerely | |
| 142. we shall have | |
| 143. B. & O. | |
| 144. they would | |
| 145. we wrote you | |
| 146. less than | |
| 147. within the | |
| 148. in this matter | |
| 149. that the | |
| 150. years ago | |

## TEST C-7

| | |
|---|---|
| 1. a | |
| 2. no | |
| 3. an | |
| 4. old | |
| 5. time | |
| 6. book | |
| 7. say | |
| 8. three | |
| 9. eat | |
| 10. yard | |
| 11. home | |
| 12. as | |
| 13. baby | |
| 14. lay | |
| 15. spent | |
| 16. stone | |
| 17. away | |
| 18. find | |
| 19. its | |
| 20. far | |
| 21. cast | |
| 22. outside | |
| 23. race | |
| 24. left | |
| 25. want | |

| | |
|---|---|
| 26. life | |
| 27. our | |
| 28. name | |
| 29. keep | |
| 30. any | |
| 31. seem | |
| 32. story | |
| 33. become | |
| 34. burn | |
| 35. across | |
| 36. set | |
| 37. black | |
| 38. dash | |
| 39. war | |
| 40. high | |
| 41. herself | |
| 42. people | |
| 43. leave | |
| 44. however | |
| 45. body | |
| 46. provide | |
| 47. stole | |
| 48. real | |
| 49. almost | |
| 50. heart | |

| | |
|---|---|
| 51. while | |
| 52. wire | |
| 53. capture | |
| 54. carry | |
| 55. inspect | |
| 56. fair | |
| 57. God | |
| 58. use | |
| 59. been | |
| 60. tax | |
| 61. elect | |
| 62. pleasure | |
| 63. sudden | |
| 64. slide | |
| 65. appear | |
| 66. friend | |
| 67. raise | |
| 68. usual | |
| 69. entrance | |
| 70. prison | |
| 71. amount | |
| 72. escape | |
| 73. sail | |
| 74. terrible | |
| 75. convict | |

| | |
|---|---|
| 76. relative | |
| 77. effort | |
| 78. primary | |
| 79. present | |
| 80. although | |
| 81. forenoon | |
| 82. publication | |
| 83. prepare | |
| 84. attention | |
| 85. feature | |
| 86. complete | |
| 87. improvement | |
| 88. affair | |
| 89. opinion | |
| 90. pleasant | |
| 91. accident | |
| 92. political | |
| 93. really | |
| 94. relief | |
| 95. finally | |
| 96. agreement | |
| 97. arrangement | |
| 98. emergency | |
| 99. February | |
| 100. principle | |

| | |
|---|---|
| 101. on the | |
| 102. at the | |
| 103. to make | |
| 104. he was | |
| 105. may be | |
| 106. to have | |
| 107. of their | |
| 108. which is | |
| 109. this is | |
| 110. your order | |
| 111. do you | |
| 112. are not | |
| 113. could not | |
| 114. will you | |
| 115. let us | |
| 116. I would | |
| 117. we believe | |
| 118. in that | |
| 119. to ask | |
| 120. I was | |
| 121. I've | |
| 122. it is not | |
| 123. it has | |
| 124. which you | |
| 125. I want | |

| | |
|---|---|
| 126. as much | |
| 127. in your letter | |
| 128. I do not | |
| 129. at the same time | |
| 130. in my | |
| 131. if this | |
| 132. to sell | |
| 133. send us | |
| 134. at any | |
| 135. last year | |
| 136. if it is | |
| 137. you cannot | |
| 138. you see | |
| 139. ten days | |
| 140. in the future | |
| 141. at present | |
| 142. who can | |
| 143. did you | |
| 144. this is the | |
| 145. with its | |
| 146. on the other hand | |
| 147. your attention | |
| 148. in time | |
| 149. the order | |
| 150. you will have | |

## TEST C-8

| | | | |
|---|---|---|---|
| 1. it | | 26. here | |
| 2. now | | 27. more | |
| 3. my | | 28. room | |
| 4. bad | | 29. start | |
| 5. may | | 30. could | |
| 6. by | | 31. even | |
| 7. come | | 32. open | |
| 8. land | | 33. class | |
| 9. sit | | 34. camp | |
| 10. bring | | 35. tonight | |
| 11. much | | 36. stamp | |
| 12. send | | 37. warm | |
| 13. well | | 38. fell | |
| 14. nine | | 39. summer | |
| 15. foot | | 40. talk | |
| 16. free | | 41. power | |
| 17. paper | | 42. ever | |
| 18. give | | 43. early | |
| 19. very | | 44. mind | |
| 20. gave | | 45. trust | |
| 21. card | | 46. sight | |
| 22. dark | | 47. income | |
| 23. cover | | 48. recover | |
| 24. ship | | 49. brought | |
| 25. girl | | 50. month | |

| | |
|---|---|
| 51. also | |
| 52. few | |
| 53. wrote | |
| 54. chain | |
| 55. itself | |
| 56. dollar | |
| 57. teacher | |
| 58. thought | |
| 59. yesterday | |
| 60. number | |
| 61. aboard | |
| 62. navy | |
| 63. forty | |
| 64. farther | |
| 65. liberty | |
| 66. during | |
| 67. August | |
| 68. complaint | |
| 69. importance | |
| 70. engine | |
| 71. human | |
| 72. since | |
| 73. cities | |
| 74. surprise | |
| 75. private | |

| | |
|---|---|
| 76. progress | |
| 77. important | |
| 78. result | |
| 79. action | |
| 80. prompt | |
| 81. lose | |
| 82. machine | |
| 83. vessel | |
| 84. education | |
| 85. article | |
| 86. search | |
| 87. century | |
| 88. course | |
| 89. believe | |
| 90. guess | |
| 91. invitation | |
| 92. national | |
| 93. celebration | |
| 94. occupy | |
| 95. develop | |
| 96. unfortunate | |
| 97. reference | |
| 98. appreciate | |
| 99. immediate | |
| 100. judgment | |

| | |
|---|---|
| 101. for the | |
| 102. we have | |
| 103. has been | |
| 104. you can | |
| 105. to do | |
| 106. to us | |
| 107. is not | |
| 108. of these | |
| 109. you may | |
| 110. that this | |
| 111. in his | |
| 112. we cannot | |
| 113. I can | |
| 114. five hundred dollars | |
| 115. to write | |
| 116. that it is | |
| 117. which the | |
| 118. and are | |
| 119. and brother | |
| 120. after the | |
| 121. I wish | |
| 122. I will | |
| 123. may have | |
| 124. and our | |
| 125. of my | |

| | |
|---|---|
| 126. as they | |
| 127. sincerely yours | |
| 128. in addition | |
| 129. at this time | |
| 130. it would | |
| 131. if you wish | |
| 132. was not | |
| 133. that it was | |
| 134. at that | |
| 135. to any | |
| 136. in these | |
| 137. by return mail | |
| 138. at the present time | |
| 139. that there | |
| 140. in the past | |
| 141. business men | |
| 142. will you kindly | |
| 143. f. o. b. | |
| 144. to bring | |
| 145. with reference to | |
| 146. rather than | |
| 147. your name | |
| 148. is to be | |
| 149. there's | |
| 150. you will receive | |

## TEST C-9

| | |
|---|---|
| 1. is | |
| 2. man | |
| 3. up | |
| 4. red | |
| 5. into | |
| 6. have | |
| 7. hand | |
| 8. cold | |
| 9. lot | |
| 10. tell | |
| 11. call | |
| 12. one | |
| 13. about | |
| 14. face | |
| 15. blow | |
| 16. lake | |
| 17. put | |
| 18. new | |
| 19. or | |
| 20. alike | |
| 21. south | |
| 22. band | |
| 23. fire | |
| 24 train | |
| 25. part | |

| | |
|---|---|
| 26. car | |
| 27. when | |
| 28. hope | |
| 29. mail | |
| 30. should | |
| 31. without | |
| 32. short | |
| 33. horse | |
| 34. bear | |
| 35. tenth | |
| 36. light | |
| 37. unless | |
| 38. fight | |
| 39. above | |
| 40. June | |
| 41. wish | |
| 42. held | |
| 43. close | |
| 44. shall | |
| 45. extra | |
| 46. stood | |
| 47. bought | |
| 48. mountain | |
| 49. less | |
| 50. children | |

| | |
|---|---|
| 51. return | |
| 52. please | |
| 53. else | |
| 54. death | |
| 55. always | |
| 56. evening | |
| 57. November | |
| 58. person | |
| 59. among | |
| 60. October | |
| 61. jail | |
| 62. fourth | |
| 63. instead | |
| 64. duty | |
| 65. enough | |
| 66. through | |
| 67. Tuesday | |
| 68. auto | |
| 69. carried | |
| 70. visit | |
| 71. view | |
| 72. which | |
| 73. known | |
| 74. period | |
| 75. command | |

| | |
|---|---|
| 76. entire | |
| 77. due | |
| 78. Saturday | |
| 79. justice | |
| 80. attempt | |
| 81. combination | |
| 82. toward | |
| 83. busy | |
| 84. director | |
| 85. service | |
| 86. treasure | |
| 87. total | |
| 88. neither | |
| 89. system | |
| 90. circular | |
| 91. accept | |
| 92. recent | |
| 93. folks | |
| 94. probably | |
| 95. circumstance | |
| 96. majority | |
| 97. evidence | |
| 98. sincerely | |
| 99. convenient | |
| 100. recommend | |

| | |
|---|---|
| 101. to be | |
| 102. will be | |
| 103. I am | |
| 104. we can | |
| 105. and that | |
| 106. of all | |
| 107. at once | |
| 108. on your | |
| 109. of which | |
| 110. of its | |
| 111. that they | |
| 112. as to | |
| 113. in reply | |
| 114. he had | |
| 115. you will find | |
| 116. and will | |
| 117. any other | |
| 118. for it | |
| 119. can not | |
| 120. in such | |
| 121. of time | |
| 122. not only | |
| 123. the other | |
| 124. few days | |
| 125. on his | |

| | |
|---|---|
| 126. in any | |
| 127. the time | |
| 128. in order that | |
| 129. do so | |
| 130. of those | |
| 131. in the world | |
| 132. and see | |
| 133. to call | |
| 134. cannot be | |
| 135. to their | |
| 136. just as | |
| 137. he cannot | |
| 138. I can't | |
| 139. this will | |
| 140. on hand | |
| 141. for their | |
| 142. with which | |
| 143. five pounds | |
| 144. to come | |
| 145. young man | |
| 146. the whole | |
| 147. and also | |
| 148. I suppose | |
| 149. they're | |
| 150. you wish | |

## TEST C-10

| | | | |
|---|---|---|---|
| 1. she | | 26. word | |
| 2. ten | | 27. from | |
| 3. last | | 28. same | |
| 4. of | | 29. eye | |
| 5. him | | 30. city | |
| 6. are | | 31. afternoon | |
| 7. ring | | 32. lady | |
| 8. hot | | 33. care | |
| 9. box | | 34. clear | |
| 10. five | | 35. sir | |
| 11. long | | 36. coming | |
| 12. has | | 37. clothing | |
| 13. men | | 38. buy | |
| 14. miss | | 39. express | |
| 15. block | | 40. right | |
| 16. page | | 41. because | |
| 17. each | | 42. church | |
| 18. letter | | 43. flower | |
| 19. thank | | 44. alone | |
| 20. add | | 45. dress | |
| 21. deep | | 46. fix | |
| 22. game | | 47. paid | |
| 23. age | | 48. steamer | |
| 24. saw | | 49. event | |
| 25. still | | 50. build | |

| | |
|---|---|
| 51. those | |
| 52. picture | |
| 53. bridge | |
| 54. learn | |
| 55. something | |
| 56. plan | |
| 57. subject | |
| 58. nor | |
| 59. question | |
| 60. reason | |
| 61. shed | |
| 62. population | |
| 63. throw | |
| 64. intend | |
| 65. fact | |
| 66. police | |
| 67. struck | |
| 68. vacation | |
| 69. loss | |
| 70. guest | |
| 71. election | |
| 72. length | |
| 73. several | |
| 74. addition | |
| 75. debate | |

| | |
|---|---|
| 76. president | |
| 77. include | |
| 78. appoint | |
| 79. gentleman | |
| 80. whose | |
| 81. avenue | |
| 82. success | |
| 83. prefer | |
| 84. purpose | |
| 85. injure | |
| 86. popular | |
| 87. mention | |
| 88. local | |
| 89. possible | |
| 90. argument | |
| 91. impossible | |
| 92. business | |
| 93. meant | |
| 94. foreign | |
| 95. issue | |
| 96. elaborate | |
| 97. experience | |
| 98. athletic | |
| 99. receipt | |
| 100. allege | |

| | |
|---|---|
| 101. we are | |
| 102. of you | |
| 103. you will | |
| 104. is the | |
| 105. as the | |
| 106. you have | |
| 107. that is | |
| 108. there are | |
| 109. more than | |
| 110. he is | |
| 111. he will | |
| 112. United States | |
| 113. five thousand dollars | |
| 114. on our | |
| 115. we should | |
| 116. as you | |
| 117. I had | |
| 118. respectfully yours | |
| 119. in its | |
| 120. five hundred | |
| 121. than the | |
| 122. thank you | |
| 123. that's | |
| 124. to it | |
| 125. from this | |

| | |
|---|---|
| 126. shall be | |
| 127. New York City | |
| 128. to look | |
| 129. send you | |
| 130. has not | |
| 131. we find | |
| 132. it may be | |
| 133. and they | |
| 134. we feel | |
| 135. from our | |
| 136. who was | |
| 137. of such | |
| 138. in this case | |
| 139. I do | |
| 140. under separate cover | |
| 141. to believe | |
| 142. if you do not | |
| 143. you did | |
| 144. for these | |
| 145. very glad | |
| 146. better than | |
| 147. to furnish | |
| 148. as follows | |
| 149. it must be | |
| 150. to all | |

# MEASURING SCALE FOR KNOWLEDGE OF GREGG SHORTHAND

By ELMER HOKE, Ph.D.

| 100 | 99 | 98 | 96 | 94 | 92 | 88 | 84 | 79 | 73 | 66 | 58 | 50 | 42 | 34 | 27 | 21 | 16 | 12 | 8 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| time | book | work | so right | boy getting | on out | stand shed | form wind | yet | upon appear | Miss | ice | am | ago | table | street | husband | figure | left | theater | complaint |
| set | say | there | day dress | head forget | hard price | than live | small beside | watch | March usual | felt | none | built | my | dead | awful | escape | separate | aboard | associate | daughter |
| who | eat | too | get today | as teach | heard no | public world | matter door | second | often summer | attend | annual | divide | jail | degree | itself | celebration | eye | justice | | witness |
| *by the* | lay | old | ease some | race ask | an keep | stone kill | war though | find | left room | big | went | father | men | estimate | combination | instead | population | afraid | | *and brother* |
| | high | dash | press soon | raise week | seem fair | real where | body await | want | cut alike | hurt | within | says | sir | entitle | total | folks | athletic | restrain | | |
| | it | wire | a boat | land meet | use navy | nine run | carry under | life | soap bought | rather | Mrs. | least | offer | pleasure | avenue | sincerely | o'clock | *they're* | | |
| | by | tax | far place | class made | since course | ever delay | talk true | girl | spend service | white | *dozen* | court | crowd | relative | prefer | Christmas | pound | *in connection* | | |
| | ship | well | our glass | call know | now paper | guess took | also size | camp | remain thank | list | line | soft | quite | farther | argument | suffer | *B. & O.* | *with* | | |
| | add | give | any theae | when them | cover power | less sure | number fall | man | six debate | elect | done | song | post | search | beautiful | serious | *as follows* | | | |
| | be | gave | black order | last stay | one month | into feet | bear most | horse | side popular | relief | aunt | beg | women | invitation | department | became | | | | |
| | pay | could | leave see | long condition | blow wish | new noon | fight water | she | news born | bad | cast | colonies | among | unfortunate | employ | cordially | | | | |
| | but | is | heart law | lady rain | each plan | hope ticket | June all | word | died wonder | mind | burn | rule | flight | unless | refuse | examination | | | | |
| | feel | red | while tree | January home | age allege | fact thus | auto thus | build | young arrive | lose | stomp | prison | family | election | practical | *we shall take* | | | | |
| | you | have | been read | if its | same fix | issue army | ten knew | nice | final night | person | prompt | really | woman | foreign | together | *pleasure* | | | | |
| | state | held | may ready | road friend | can common | deep account | ring doubt | stop | yard history | five | south | forty | morning | bed | proceed | *your account* | | | | |
| | way | death | come and | late opinion | glad reach | those I | event cost | blue | God country | paid | extra | short | inspect | inside | especially | *we beg* | | | | |
| | *are not* | view | sit he | happy even | money April | me would | seven inform | walk | sail Thursday | had | recent | close | entrance | enter | support | *kindly let us* | | | | |
| | *and our* | which | very this | gone early | look end | not government | gold maybe | certain | send travel | spring | church | period | primary | destroy | convention | | | | | |
| | *of time* | addition | here how | play face | hour great | us assure | broke pretty | allow | dark position | refer | flower | drown | improvement | volume | truck | | | | | |
| | *is the* | hat | wrote after | shut please | whom serve | ran although | over trouble | east | fire publish | west | meant | length | accident | session | engage | | | | | |
| | *from this* | for | chain air | will of | plant seen | organize forenoon | obtain manner | town | else connection | able | fifth | picture | political | preliminary | conference | | | | | |
| | *it will* | take | action ought | think game | hold pair | house brought | came almost | again | visit worth | goes | effect | reccipt | agreement | empire | *to secure* | | | | | |
| | *about the* | every | believe answer | said clean | like two | half appreciate | Mr. publication | honor | still estate | minute | child | citizen | emergency | property | *at the same time* | | | | | |
| | *in it* | try | due go | led piece | point ledge | make immediate | past February | school | clear remember | wear | club | top | recover | diamond | *undersepar ate cover* | | | | | |
| | *on that* | do | up good | fail large | little May | just put | judge yesterday | front | began consider | another | don't | spell | surprise | secretary | *better than* | | | | | |
| | | with | hand low | baby rate | sent firm | told part | must machine | enjoy | once direction | anyway | district | lesson | private | push | *at least* | | | | | |
| | | hear | lot year | name was | we back | drill several | never education | does | speak perfect | except | assist | weather | command | summon | *with regard to* | | | | | |
| | | did | lake thing | amount pass | kind file | motion mention | wife evening | around | clerk objection | written | *official* | select | probably | unable | *dear doctor* | | | | | |
| | | sick | or cannot | free lesd | scene section | trip possible | cause through | driven | move comfort | winter | Monday | automobile | steamer | might | *on account of* | | | | | |
| | | the | car first | fell fill | three arrange | victim bridge | begun gentleman | regard | expect request | already | anything | finish | vacation | vote | *upon his* | | | | | |
| | | her | should suit | about at | stole outside | between question | chief local | spent | weigh forward | grand | repair | center | experience | truly | *we should be pleased* | | | | | |
| | | that | shall next | without best | few thought | other understand | in afternoon | become | perhaps provide | across | salary | imprison | distinguish | suppose | *will you please* | | | | | |
| | | field | return wait | learn help | vessel during | bill Friday | along letter | affair | mere terrible | occupy | mile | stopped | stood | uncle | | | | | | |
| | | sea | nor your | page character | much card | wreck company | copy impossible | bring | mayor judgment | foot | deal | various | four | testimony | | | | | | |
| | | easy | loss to | care | open trust | story report | decide date | sight | arrest reference | liberty | claim | member | start | *it is not* | | | | | | |
| | | *dear sir* | him his | *very truly yours* | cold income | sudden general | lost office | human | absence evidence | result | however | promise | busy | *in my* | | | | | | |
| | | *is that* | are they | *if you will* | train Saturday | more Sunday | both running | tenth | declare mountain | treasure | slide | act | whose | *in the future* | | | | | | |
| | | *on the* | hot were | *could be* | box appoint | cities before | direct famous | duty | begin Tuesday | accept | prepare | visitor | love | *at the present time* | | | | | | |
| | | *at the* | has many | *may be* | from success | light charge | away different | buy | rapid carried | guest | national | respectfully | board | *business men* | | | | | | |
| | | *do you* | city term | *I would* | coming business | entire show | people interest | injure | address clothing | ball | enough | capture | river | *with reference to* | | | | | | |
| | | *in that* | *therefore* | *you cannot* | ride statement | tell round | effort follow | dear | north president | fortune | attempt | finally | adopt | *it may be* | | | | | | |
| | | *this is the* | *if you can* | *you will have* | only off | band themselves | warm September | turn | behind information | concern | toward | teacher | poor | *might be* | | | | | | |
| | | *your attention* | *he can* | *that it was* | write doctor | mail receive | dollar near | desire | royal proper | rest | express | develop | mother | *trusting that* | | | | | | |
| | | *for the* | *I could* | *your name* | then print | police collect | August mine | mean | sorry expense | third | reason | children | fourth | | | | | | | |
| | | *which the* | *that the* | *you will find* | own railroad | block contain | system grant | eight | oblige supply | tire | include | circular | madam | | | | | | | |
| | | *and are* | *this is* | *and will* | yes their | saw increase | above got | suggest | either newspaper | station | retire | circumstance | career | | | | | | | |
| | | *I will* | *could not* | *than the* | sold happen | *for which* | always December | fine | herself factory | association | marriage | something | brother | | | | | | | |
| | | *in these* | *will you* | *there are* | omit need | *and make* | known whole | down | *in fact* | represent | party | earliest | *we shall be pleased* | | | | | | | |
| | | *can not* | *which you* | *we are not* | son found | *he was* | throw favor | study | *within the* | provision | better | extreme | *in regard to* | | | | | | | |
| | | *he cannot* | *if it is* | *we enclose* | check tomorrow | *you see* | miss indeed | senate | *to write* | investigate | nearly | everything | *less than* | | | | | | | |
| | | *I have* | *in time* | *you will be* | what why | *in addition you* | alone himself | height | *I wish* | principal | sometimes | disappoint | *on the other hand* | | | | | | | |
| | | *have the* | *as they* | *he could* | full | *of all* | belong | prove | *do so* | Wednesday | beginning | whether | *in his* | | | | | | | |
| | | *with the* | *at that* | *when they* | *five dollars* | *in any* | *of it* | special | *and see* | attention | consideration | *let us* | *of my* | | | | | | | |
| | | *for you* | *we have* | *with your* | *I shall* | *you have* | *to which* | reply | *to their* | pleasant | application | *five hundred dollars* | *was not* | | | | | | | |
| | | *at our* | *you can* | *will not* | *and their* | *shall be* | *they would* | catch | *send you* | principle | entertain | *by return mail* | *in the past* | | | | | | | |
| | | *by this* | *of these* | *we have the* | *I want* | *we find* | *to make* | change | *to meet* | tonight | committee | *that there* | *rather than* | | | | | | | |
| | | *and not* | *that this* | *for us* | *with its* | *of our* | *to have* | region | *that you* | progress | sister | *in the world* | *he had* | | | | | | | |
| | | *and the* | *we cannot* | *and was* | *that it is* | *to get* | *I was* | particular | *to him* | important | decision | *just as* | *on his* | | | | | | | |
| | | *in our* | *I can* | *that it* | *is to be* | *to place* | *to sell* | organization | *who had* | century | discussion | *I can't* | *on hand* | | | | | | | |
| | | *it will be* | *after the* | *your letter* | *as to* | *to me* | *the order* | present | *to receive* | majority | against | *thank you* | *I suppose* | | | | | | | |
| | | *we take* | *at this time* | *you want* | *with which* | *he should* | *f. o. b.* | feature | *we remain* | struck | arrangement | *to believe* | *respectfully yours* | | | | | | | |
| | | | *I am* | *at first* | *we are* | *to this* | *in reply* | engine | *and is* | purpose | convict | *and company* | *that's* | | | | | | | |
| | | | *will be* | *but the* | *on our* | *with our* | *of those* | article | *let me* | neighbor | complete | *they were* | *New York City* | | | | | | | |
| | | | *and that* | *on this* | *in its* | *should be* | *to call* | October | *to speak* | illustrate | inportance | *to my* | *it must be* | | | | | | | |
| | | | *that they* | *with this* | *we feel* | *we want* | *and also* | director | *we wish* | material | recommend | *you do not* | *to send* | | | | | | | |
| | | | *for it* | *which is* | *we would* | *we desire* | *who was* | because | *to tell* | ground | November | *they will* | *yes sir* | | | | | | | |
| | | | *the time* | *if this* | *I know* | *we receive* | *I do* | subject | *who have* | further | neither | *to see* | *my dear Mr.* | | | | | | | |
| | | | *cannot be* | *wha can* | *on it* | *over the* | *to give* | cent | *it has been* | *ought to* | convenient | *to say* | *to send you* | | | | | | | |
| | | | *you will* | *did you* | *you know* | *I shall be* | *that are* | until | *in your letter* | *of their* | intend | *to know* | *among the* | | | | | | | |
| | | | *you did* | *you may* | *would not* | *what is* | *have been* | measure | *sincerely yours* | *I've* | elaborate | *call your attention* | *we are sending you* | | | | | | | |
| | | | *for these* | *we can* | *every day* | *if we* | *that will* | enclose | *will you kindly* | *at once* | nothing | | *for some time* | | | | | | | |
| | | | *of you* | *of its* | *is in* | *last year* | *to them* | necessary | *any other* | *to look* | personal | | *I don't know* | | | | | | | |
| | | | *as the* | *this will* | *when the* | *to do* | *should have* | secure | *five pounds* | *we had* | responsible | | | | | | | | | |
| | | | *he will* | *has not* | *we must* | *will receive* | *so much* | object | *young man* | *he does* | distribute | | | | | | | | | |
| | | | *as you* | *of them* | *are you* | *not only* | *had been* | such | *very glad* | *very much* | *in your* | | | | | | | | | |
| | | | *to it* | *of that* | *will have* | *the whole* | *of what* | wonderful | *some of the* | *to work* | *I'll* | | | | | | | | | |
| | | | *in this case* | *from the* | *to take* | *more than* | *can be* | difference | *along the* | *dear Mr.* | *as much* | | | | | | | | | |
| | | | *of the* | *in order* | *and it is* | *five thousand dollars* | *before the* | contract | *we should be glad* | *so far as* | *send us* | | | | | | | | | |
| | | | *have you* | *he did* | *we trust that* | *we shall be* | *I should like* | difficulty | *it would be* | *to our* | *that is* | | | | | | | | | |
| | | | *of this kind* | *to you* | *from which* | *in which the* | *we shall have* | according | *dear madam* | *yours sincerely* | *I had* | | | | | | | | | |
| | | | *you are* | *and have* | *which will* | *in which* | *we wrote you* | *upon the* | *as to the* | *your order* | *to all* | | | | | | | | | |
| | | | *you would* | *we could* | *in all* | *to go* | *we believe* | *at any* | *for him* | *has been* | *to his* | | | | | | | | | |
| | | | *if you are* | *by which* | *we hope* | *must be* | *it has* | *to us* | *railroad company* | *the other* | *give us* | | | | | | | | | |
| | | | *who are* | *it is* | *we trust* | *was the* | *ten days* | *to bring* | *five per cent* | *few days* | *please let* | | | | | | | | | |
| | | | *to the* | *we may* | *if there* | *I believe* | *may have* | *there's* | *to become* | *my dear sir* | *I don't* | | | | | | | | | |
| | | | *of this* | *if not* | *in this matter* | *with us* | *of which* | *in such* | *does not* | *some time ago* | *do not* | | | | | | | | | |
| | | | *if you* | *we shall* | *is not* | *we regret* | *in order that* | *which was* | | *more or less* | *five cents* | | | | | | | | | |
| | | | *in this* | *if they* | *it would* | *at the time* | *you wish* | *to put* | | *we sent you* | *you're* | | | | | | | | | |
| | | | *we will* | | *to be* | *as well as* | *to come* | *of his* | | *at any time* | *of course* | | | | | | | | | |
| | | | *did not* | | *for their* | *hear from you* | *five hundred* | *to serve* | | *five hundred* | *to ask* | | | | | | | | | |
| | | | *by you* | | *from our* | *should not be* | *five thousand* | *any one* | | *thousand dollars* | *I do not* | | | | | | | | | |
| | | | *if the* | | *he is* | | *there is* | *to learn* | | | *to any* | | | | | | | | | |
| | | | *about it* | | *we should* | | *under the* | *to keep* | | | *United States* | | | | | | | | | |
| | | | *we are in* | | *and they* | | *to find* | *to those* | | | *if you do not* | | | | | | | | | |
| | | | *if it* | | *yours very truly* | | *thank you for* | *and sons* | | | *to furnish* | | | | | | | | | |
| | | | *in this way* | | *I think* | | *to have you* | *give you* | | | *no doubt* | | | | | | | | | |
| | | | *can you* | | *we have not* | | *why not* | *years ago* | | | *two or three* | | | | | | | | | |
| | | | *you could* | | *in the* | | *we have been* | *at present* | | | *we do not* | | | | | | | | | |
| | | | *it was* | | *and in* | | *we shall be glad* | *if you wish* | | | *this morning* | | | | | | | | | |
| | | | *would be* | | *us it is* | | *shall have* | *on your* | | | *your favor* | | | | | | | | | |
| | | | *to pay* | | *up the* | | | *of such* | | | *yours respectfully* | | | | | | | | | |
| | | | *at this* | | *we think* | | | *in making* | | | | | | | | | | | | |
| | | | *for that* | | *I should* | | | *we should like* | | | | | | | | | | | | |
| | | | *this matter* | | *to that* | | | *one of the* | | | | | | | | | | | | |
| | | | *which are* | | *would have* | | | *through the* | | | | | | | | | | | | |
| | | | *there will be* | | *from you* | | | *in this country* | | | | | | | | | | | | |
| | | | *with that* | | *at last* | | | *into the* | | | | | | | | | | | | |
| | | | | | *who is* | | | *as soon as* | | | | | | | | | | | | |
| | | | | | *is it* | | | *you desire* | | | | | | | | | | | | |
| | | | | | *at all* | | | | | | | | | | | | | | | |
| | | | | | *he would* | | | | | | | | | | | | | | | |

The 1,000 commonest words are printed in Roman, while the 500 commonest phrases are printed in italics. All the words in any one column are of approximately equal difficulty. The steps in difficulty from each column to the next are approximately equal. The numbers at the top indicate about what per cent of correct shorthand outlines may be expected. For example, if 20 words from column 88 are given as a shorthand test, it may be expected that the average score for an entire class writing them will be about 88 per cent. Scores for classes that have had one year's instruction should be expected to be three points lower, and for classes that have had one and one-half to two years' instruction, three points higher, than the scores given on the scale.

96 means 96 and 97 per cent; 94 means 94 and 95 per cent; 92 means from 91 through 93 per cent; 88 means from 87 through 90 per cent; 84 means from 82 through 86 per cent; 79 means from 77 through 81 per cent; 73 means from 70 through 76 per cent; 66 means from 63 through 69 per cent; 58 means from 55 through 62 per cent; 50 means from 46 through 54 per cent; 42 means from 38 through 45 per cent; 34 means from 31 through 37 per cent; 27 means from 24 through 30 per cent; 21 means from 19 through 23 per cent; 16 means from 14 through 18 per cent; 12 means from 10 through 13 per cent; 8 means from 7 through 9 per cent; 6 means 5 and 6 per cent.

This scale is for the use of teachers in making their own tests. For this purpose the teacher should select a list of 20 or more words from one column. The selection of words and phrases should be made in accordance with the purpose of the test. For instance, it would be possible to select words or phrases which will test a particular lesson or group of lessons in the Gregg Manual. It will usually be found best to select all the words and phrases from one column, and preferably from one of the middle columns of the scale, rather than the very easy or the very difficult columns at either end. If words are selected from more than one column, the difference in difficulty must be recognized.

The form of this scale and the statistical methods involved are adapted from the plan of the Ayres Spelling Scale. The 1,000 commonest words are also taken from that scale. The 500 commonest phrases were derived from an investigation conducted by the author of the present scale. The values assigned on this scale are computed from 422,700 outlines or nttempts by 2,818 pupils in many different cities, towns, and states.

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